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STRINGHALT IN HORSES.*

BY G. A. BANHAM, F.R.C.V.S., CAMBRIDGE.

I FEAR the subject I have chosen to bring before you to-day, viz., "Stringhalt," will not be so interesting as I could wish, because our knowledge of its pathology is not sufficient to enable us to arrive at any definite conclusions. Nor are our interests in the malady very often aroused by our clients, for they, as a rule, consider (with perfect right, perhaps) that they know as much about it as ourselves, and therefore rarely ask our advice, or think of giving us an opportunity of studying the affection in its early stages, or of tracing any connections between it and other diseases or injuries.

I have, however, ventured to occupy your time with it from, perhaps, a very selfish motive, viz., that of learning something myself; and, also, because I think the less we know of a malady the more we ought to experiment, and interchange our views with each other about it, in the hope that some one will ultimately be fortunate enough to hit upon a sound theory, or at least one which cannot be objected to upon any scientific basis.

Our literature on the subject is neither large nor instructive, but such as it is, I have endeavoured to bring before you, in order that you may enlarge it. At any rate, I trust we shall find matter enough to occupy our thoughts and create a lively discussion.

* Read at the meeting of the Eastern Counties' Veterinary Medical Society on June 4th.

Name.—"Stringhalt" is the name by which this affection has been known for a very long time, and I do not think we can with advantage designate it by a more suitable one, until we are better acquainted with its pathology. However old and unscientific the name of a disease may be, I consider it is better to adhere to it, until we have some solid and scientific reason to alter it. In some parts of America it appears to have got changed to "Springhalt." In Germany they term it *Der Zuckfuss, Hahnentritt der Pferde;* in France, *éparvin sec.*

Definition.—Stringhalt may be defined as an abnormal action of one or more limbs, characterized by a violent flexion of all the ginglymoid joints of the limb (especially of the hock), whereby the foot is spasmodically raised, incompletely extended, and very frequently brought to the ground with increased force.

Animals and limbs attacked.—It usually affects one or other of the hind limbs of horses, and sometimes both: cases are recorded of the fore limbs being affected (Blaine's "Veterinary Art," and *Veterinarian* for 1869, p. 561). Donkeys are sometimes the subject of the disease (*Veterinarian*, 1869, p. 516); and one case (?) is mentioned of a cow having Stringhalt of the hind leg of the milking side (*Veterinarian*, February, 1842).

Distribution.—It is a common disease in England and America. "Nimrod" says in the *Veterinarian* for 1839, p. 516, that it is rarely seen in France. I am not able to say to what extent the disease does occur in other countries, but perhaps some here present may be able to enlighten us on this matter.

Shape of Hock mostly predisposed.—"Cow" (or sickle-shaped) hocks are more subject to this affection, and Dieckerhoff thinks this is due to the abnormal union between the tibia and astragalus preventing a full extension of the hock, which allows the fascia in front of the limb to shrink.

Pathological Anatomy.—Lafosse and other French authors found no pathological changes.

Professor Spooner, assisted by Messrs. Sewell and Ferguson, made a *post-mortem* examination of a racehorse named "Guilford," and found the crural and lumbar nerves perfectly healthy. "The sciatic nerve, where it escapes from the spine, was darker in colour, being of a yellowish hue; its texture soft, and its fibrillæ

somewhat loosely connected together. It was of its usual size. But on tracing it from the ischium, in its course through the muscles of the haunch, several spots of ecchymosis here and there presented themselves, particularly on that part of the nerve which is connected with the sacro-sciatic ligament. As the nerve approached the hock it assumed its natural colour and tone; and the fibres given off from it to the muscles situated inferior to the stifle joint were of a perfectly healthy character. On taking out a portion of the nerve where it appeared to be most diseased, it was found that the ecchymosis belonged to the neurilemma. It was confined to the membranous investiture of the nerve; for when the substance of the nerve was pressed from its sheath, it presented a perfectly natural character. The spinal cord was healthy, as were also the joints and articulations."

Professor Varnell noticed, in one particular case, "that the areolar tissue which invested the sciatic nerve, from a little below the sacral foramina, to the point where it gives off the lesser sciatic, was considerably thickened, and, as compared with the same covering to the nerve on the opposite side, was of a palish brown colour. He carefully separated the fasciculi of this nerve, but could not discover that its fibres had been structurely interfered with. Still, the altered and condensed state of the investing tissue may have been a source of persistent irritation when the limb was moved" (*Veterinarian*, 1863, p. 593).

Others have found anchylosis of the vertebræ, accompanied by a narrowing of the spinal canal and intervertebral foramina (Goodwin).

Renner found the sciatic nerve reddened, and the bursa on the trochanter major inflamed, enlarged, and thickened, and a new bursa formed on the ischial tuberosity under the muscularis semitendinosus.

Günther discovered this muscle to be much softer in the side affected, than on the sound side ("Myologie," p. 211).

Dieckerhoff says he found hyperæmia of the sciatic nerve in healthy horses bled to death, as well as in those affected with Stringhalt. All he could permanently detect was a hard and firm condition of the connective tissue (fascia). In order to

observe this, the tissue should be examined soon after death, otherwise it becomes dry, and is apt to be overlooked.

Resumé.—Thus we see the only lesions that have been found by investigators of this disease, are—1, Anchylosis of the vertebræ and its consequences, viz., a diminution in the size of the spinal canal and intervertebral foramina, with spicula and roughness of the bone; 2, Ecchymosis and thickening of the neurilemma of the sciatic nerve; 3, Various new formations, which have at times been thought to press upon adjacent nerve fibres, such as melanotic tumours, etc.; and, 4, a hard, firm condition of the connective tissue (fascia).

ETIOLOGY.

From the fact that Stringhalt has been found to attack horses which had suffered from an injury to the spine, causing anchylosis of the vertebræ, some have thought that during this healing process the spinal canal and the intervertebral foramen became smaller, and produced pressure on the cord, or nerves as they leave the cord, or that spiculæ of bone projected and stimulated the nerves (Goodwin). Percivall refers its seat to the *spinal marrow*, or to *the nervous trunks passing between it and the affected muscles:* an opinion, he says, "he was first led to adopt from having observed a broken-backed (chinked) horse exhibit all the characteristic signs of Stringhalt. It is not, however, necessary for a broken back to be present; for any other cause of irritation to this part would, we apprehend, induce the disease" ("Hippopathology," vol. iv., part ii.)

Professor Spooner, after making several *post-mortem* examinations of horses affected with this disease during life, came to the conclusion that Stringhalt was not referable to any diseased state of the brain or spinal cord, nor to any local affection of the muscles of the limb, but simply to a *morbid affection of the sciatic nerve.* As a consequence, the equal action of the muscles is destroyed. The flexors, which are naturally more powerful than the extensors, draw the tarsus on the tibia, and the tibia on the femur, bejond the position and movements of the joints, and then from the peculiar arrangement of the articulatory surface between the tibia and astragalus the hock joint suddenly

becomes flexed, producing the remarkable spasm of the limb.

Mr. Field considered idleness to be a cause of Stringhalt; and Mr. Youatt inclined to the idea, for he says, "long holiday of the flexors during standing, and the excessive stress on the extensors might cause a disproportionate accumulation of nerve-force in one or other of these systems" (*Veterinarian*, 1838).

Mr. Youatt thought he had discovered its cause when he found an enlargement of a ganglion on one of the branches of the crural nerve—as did also Mr. Sewell, when he discovered a cyst in the belly of the triceps abductor femoris muscle (Blaine's "Veterinary Art").

Professor Williams thinks its cause "is sometimes peripheral, as when a bone spavin presses upon the nerves of the hock, Stringhalt being then due to reflex action"; and goes on to say, "In grey horses, Stringhalt is occasionally due to a deposition of melanotic material in the sheaths of the great *crural* nerve;" and he inclines to the opinion that chronic Stringhalt, or that form of it which is not dependent on Rheumatism, arises from a congested condition of the nerves and their sheaths.

Mr. Reynolds, in a paper on this subject read before the Liverpool Veterinary Medical Society in 1869, says, "that some agree that the spasmodic action of Stringhalt partakes of a convulsive character. It may be that a group of ganglionic cells of the cord in connection with the motor nerves supplying the affected muscles are in such an abnormally excited condition, that in response to ordinary stimuli they transmit extraordinary impulses, and undue contraction is the result." He also says, "Stringhalt may be due to a tardiness of action in the nervous structures which supply the muscles engaged in extending the hock and limb in a backward direction, those whose function is immediately antagonistic to the muscles in which undue contraction takes place."

Some have believed it to be due to the pain caused by the friction of the tibia passing over an irritable ulcer on the astragalus (J. Busteed, *Veterinarian*, 1863, p. 585).

An increased development of the spine of the tibia (Villate, *La Clinique, Veterinarian*, 1845), a cramped condition, rheumatic

affection of the muscular portion of the flexor metatarsi, have been considered causes (Hochsetter and Hering), as well as shortening of the tendon of the peroneus muscle (Boccar, *Annales de Med. Vet. de Belgique*, 1845).

F. and K. Günther thought it might be due either to: (*a*) the pain of diseased bones or joints of the hock, although external spasm was not present; this form they called modified spasm. (*b*) Inflammation of the connective tissue and other diseases of the fetlock, coronet, and hoof, which they termed "false Stringhalt." (*c*) A disproportionate antagonism between the muscles supplied by nerves from the sacral plexus, and they called this "true or involuntary Stringhalt." (*d*) To atrophy of the gluteals, causing a weakness in them, and want of antagonistic power.

Renner says he knew Stringhalt to follow division of the tibial nerves, and Haubner observed it follow fracture of the trochanter major, but it again gradually disappeared.

The theory which I particularly wish to bring under notice is one which, as far as I know, is new to English literature, and is that of Professor Dieckerhoff, of Berlin. After he had made several *post-mortem* examinations, he came to the conclusion that the essential cause of Stringhalt was due to an irritation, shrinking, and shortening of the fascia, more particularly that portion of the aponeurosis which takes its course on the anterior part of the limb, and unites below the hock with the tendons of the extensor pedis. Under normal circumstances, this fascia, he says, principally acts as a check to the bending back of the fetlock and hoof, and until this check is necessary the fascia is yielding. In the healthy horse we may easily see this portion of the fascia become strongly tensed at the moment the foot is lifted from the ground and the joints become flexed; the hoof, as is known, springs back at this moment, from the elasticity of the ligaments at the back of the fetlock (and not, as is sometimes thought, by an active contraction of the perforans muscle). If we acknowledge this action in the healthy state, it will be seen that the check-action of the fascia comes into full play when the flexor pedis and peroneus are contracting, but as soon as an irritating process is set up in this aponeurosis, at the anterior part of the hock, it may become contracted, and, as a consequence,

will not allow (*a*) the hock to extend to its normal degree, and (*b*) will not permit the hoof and fetlock to flex to the extent it was capable of before the contraction took place. Moreover, after the aponeurosis has contracted it loses its elasticity. According to these anatomical connections, we learn that if the coronet and fetlock joints cannot be flexed, neither can the hock and tibio-femoral joints be extended. Thus the resistance which this fascia gives to the proper flexion of the fetlock joint must be overcome in some way, and this, he argues, can only take place by the animal violently raising the hock, which relaxes this tense fascia, and flexion of the fetlock necessarily follows.

The *fascia* is connective tissue, and, histologically, belongs to the lymphatic apparatus, and is predisposed to nutritive disturbances. It may become shortened from various causes, such as resting the limb, from long-continued lameness. This continual relaxation causes the fascia to atrophy, from loss of the necessary stimulus for the nutritive supply. On the other hand, this fascia may be shortened by continual overwork; as when an animal is lame in front, and the hind limbs take most of the weight of the body.

He goes on to say, that from these facts we may divide "Stringhalt" into, (*a*) The idiopathic or true form; (*b*) That form caused by Spavin, Ringbone, and other diseased conditions; and (*c*) The symptomatic form.

(*a*) *The idiopathic or true form*, is due to a shrinking of the fascia without any apparent cause; and if horses become affected with Stringhalt before they have Spavin, they rarely contract it afterwards, because the hock cannot be completely extended. It may attack one or both legs, and in various degrees, some animals only going a few paces so; others have this action occasionally, after so many normal steps; and some have a regular number of normal ones, and then a Stringhalt step.

(*b*) Stringhalt may be caused by Spavin, Ringbone, and other diseases, from the fact that the hock never is extended to its full extent, and when resting is generally flexed, and as a consequence the fascia shrinks.

(*c*) Symptomatic or false Stringhalt is that form which is induced by inflammation of the skin in any part of the limb, from

the hock downwards, as Grease, Laminitis, wounds, etc. These cause the limb to be rested, and as a result, the fascia contracts. He has observed many cases follow treads, especially when the extensor pedis tendon is involved.

Resumé.—From the foregoing account of the ætiology of Stringhalt, we learn that it may be due to :—

1. Direct stimulation of the nerve-centres, or nerves supplying the flexors of the hock. (Goodwin, Percivall, Spooner, Sewell, and Williams.)

2. To indirect stimulation of these nerves by reflex action due to painful affections of the joints, bones, etc. (Busteed, Günther, Williams.)

3. An abnormally excited condition of the nerve-centres presiding over the flexors of the limbs. (Reynolds.)

4. A tardiness of action of the nerves' centres, or nerves supplying the extensors of the hock. (Reynolds.)

5. Want of power from Paralysis in the antagonistic muscles of those used in flexing the hock.

6. Cramp of the flexor metatarsi. (Hochsetter.)

7. A rheumatic affection of the muscles. (Hochsetter, Hering, and Williams.)

8. Shortening of the flexor muscles of the hock. (*Peroneus*, Boccar.)

9. Loss of power in the extensors from atrophy. (Günther.)

10. Shrinking of the fascia in front of the limb. (Dieckerhoff.)

Thus we see the majority of authorities believe the affection is due to some derangement of the nervous system, others to the muscular system, whilst others refer it to the fascia of the limb affected.

Symptoms.—As soon as the weight of the body is removed from the limb or limbs affected, and the animal attempts to move it from the ground, the spasmodic flexion takes place, whereby the foot is, as a rule, brought up sharply under the body; at other times, however, this action commences by the hock being raised perpendicularly, which at the moment gives one the idea that the limb is going to be thrown backwards instead of forwards, but the hock suddenly flexes and the foot is brought forward under the body. This peculiar action is, I believe, due to

the femoro-tibial joint being flexed to a certain extent before the hock; which, however, as you are all aware, can only take place to a very limited extent, because of the arrangement of the flexor metatarsi and gastrocnemii muscles and tendons; for when the tibio-femoral joint is flexed the hock must necessarily be so, and *vice versâ*. After the limb has been brought up to the body, extension takes place, but only to a limited extent; consequently, the steps are shorter than they naturally should be; the foot frequently comes to the ground with greater force than is natural to normal action, or, as Mr. Fleming puts it, "This free play is not limited to flexion only, but manifests itself also, to a certain degree, in sudden and forcible extension, when the foot of the affected limb comes to the ground with a highly magnified tread" (*Veterinarian*, 1863, p. 663).

The symptoms exhibited in this disease vary in degree to a very considerable extent. In some, slight cases only being visible during certain movements, as turning in some particular direction, and then the limb only being "*caught up*" to a limited extent. Again, the symptoms may only show themselves every few steps, and on some days worse than others. In aggravated cases the limb is not only spasmodically flexed, but is thrown outwards (abducted), the animal going with a straddling gait; whilst in others the flexion is so forcible that the fetlock is brought in contact with the abdomen, and the hair and skin are worn through—an ugly sore being the result. The foot may also strike the ground in the natural way, whereas in others it hits it hard enough to cast, and even break the shoes (see *Veterinarian*, 1838).

The pace the animal is required to perform has also a certain amount of control over the severity of the symptoms; for instance, a horse may walk tolerably well, but when put into the slow trot will snatch up the foot or feet affected, and when put into the fast trot or gallop the Stringhalt again disappears. Others may show it when walking.

Hertwig reports a very peculiar case, where the foot was spasmodically drawn up, rested there, and then brought to the ground slowly.

Course of the malady.—Stringhalt, as a rule, develops itself

slowly, and gradually becomes worse with age. Professor Williams says he has seen a very aggravated case occur in one night; this we must look upon as an exception.

The symptoms are much aggravated by injuries to the limb, by cold and other febrile disturbances. (Williams.)

Treatment.—Percivall said, "Stringhalt was never cured, either by nature or art; once Stringhalt, for ever Stringhalt." And in his day it appeared to be true; for the treatment that was adopted was neurotomy, which did not in most cases appear to do any good, and in those in which the spasmodic twitching was removed, the muscles became so atrophied that the beast was useless.

Boccar, however, appears to have been more or less successful by dividing the tendon of the peroneus muscle below the hock. He publishes the result of ten cases as follows: five cured, two improved, and with three it was useless.

Mr. W. Ernes, translating from the French, gives us the record of some of these cases, and I will read one as an illustration. "The subject of Case 1 was a six-year old bay mare. The affection was so severe that the animal hit her belly at every step with both hind legs. M. Boccar was led to perform the operation, because the extensors were so prominent over the hock. After the tendon was divided the affection on that side was no longer visible. The other side was then operated upon with the same success. The wounds healed in fifteen days. What is most remarkable in this case is, instead of the hock remaining sickle-shaped, as it was before the operation, it became straighter (*Veterinary Record*, vol. iii., 1847).

Brogneiz recommended cutting a piece out of the tendon. This Boccar seems to have done in some of his latter cases, with similar success.

Hertwig recommends division of the *tensor fascia lata*, a little below the external iliac spine, but with what success I do not know.

Dieckerhoff proposes a subcutaneous division of the fascia below the anterior part of the hock. The method of operating is to cast and secure the animal, with the limb to be operated upon uppermost. An assistant extends the toe forward, so that the fascia is tight near the tendon, and not next the skin. Make

an incision through the skin on the outer side of the metatarsal bone, about an inch-and-a-half to two inches below the hock. Then take the tenotomy knife, and introduce it slantingly into the wound, placing the left hand on the blade of the knife, which is held firmly with the right hand, whilst the thumb presses against the bone to steady it. The assistant now flexes the *foot*, which brings the fascia tight, and the operator cuts through it, but he must be careful not to divide the extensor tendon itself. It is not necessary to cut through the whole of the fascia, for it is better to leave a portion of it intact on the inner side of the limb, than to run any risk of dividing the *vena saphena magna*. Even if the vein is wounded, the hæmorrhage can easily be stopped by a compress. The after-treatment consists in placing a pad of tow and a bandage over the wound, to prevent the air entering. The wound generally heals in about five days or a week. When Professor Dieckerhoff published this account, he had only operated on two cases, and both successfully; but it requires further trial before anything positive can be said in favour of the operation.

He says, when the disease is caused by other maladies, these must be treated. Those cases which follow acute diseases, etc., or what he calls the symptomatic form, generally disappear when the disease (cause) is cured, and the limb is normally used; but if, in such cases, the disease remains for many months, then recourse must be had to the operation.

Jurisprudence.—Although horses may be useful for several years (Dieckerhoff), and even trained and win races (Youatt), still we know there is a tendency in the disease to become worse with age, and we can never prognosticate how rapidly this may take place. In many cases it does not appear to interfere with the animals' usefulness, yet it renders them less capable of attaining that degree of condition so characteristic of health (Reynolds). Moreover, in severe cases the animals become tired quickly, and consequently incapable of ordinary work. Therefore, I think, we must look upon Stringhalt in any form as *unsoundness*. Some have looked upon this affection simply as "an eyesore," and others have even believed it showed increased power. Even if this were true, we must, I think, agree with

Mr. Youatt that we do not like these irregular distributions of vital energy.

Hereditability.—Is Stringhalt capable of being transmitted from parent to offspring? I am not in a position to answer this question myself, but if it is due to any malformation or defect in the nervous structures, we can easily imagine its likelihood of being so. The only statement I can find on this subject is in the *Veterinarian* for 1869, p. 561, where Mr. Storrar states that he had seen some clearly-established instances in which Stringhalt was hereditary amongst a breed of cart-horses, all descended from a sire so affected. If this is correct, we ought to prevent, as much as possible, any sire or mare affected with the malady being used for breeding purposes.

"*Cruelty to Animals.*"—Lastly, I would ask whether it is "cruelty to animals" to work horses with Stringhalt? This, I think, depends to a great extent upon the severity of the disease and the work required of the animal. Stringhalt, in itself, we believe, is a *painless* affection, but when it is so far advanced that the fetlocks strike the abdomen, and cause abrasions of the skin, or when the limb is so abducted as to cause the stifle to come in contact with the shafts or pole of the vehicle, or when the foot is brought to the ground with such violence that the shoes are broken or cast, and the limbs and feet jarred, or when the action is so bad that the animal is distressed by the work required of it, then we consider it is cruelty to work the beast.

Criticism.—When we review the foregoing theories of Stringhalt, we cannot help being struck with the truthfulness of the phrase Mr. Youatt used when lecturing upon this disease before the University of London in 1835, when he said, "Many ingenious but contradictory theories have been advanced to account for this malady." For what can be more ingenious than the fascia theory of Professor Dieckerhoff, and what more contradictory than the theories of Spooner, Busteed, and Boccar? However, before we can arrive at any satisfactory conclusions respecting such an obscure affection, this must necessarily be the case.

I will, then, with your permission, consider, as far as I am able, the various theories that have been advanced, together with the

pathological lesions, symptoms, and methods of treatment, which have occasionally been attended with beneficial results.

"It seems natural," says Percivall, "to refer the affection to the nervous system, from the fact that the animal loses all control of the limb from the moment the foot has quitted the ground." Most English veterinarians are of this opinion, and support the idea that it is due to some direct or indirect stimulus applied to the nerve centres, or nerves supplying the flexors of the hock and stifle; and they have endeavoured to substantiate their views by seeking for lesions which could act as the necessary stimulus, such as ossification of the vertebræ, spiculæ of bone either at the foramen where the nerves pass out, or at the hock, and various other new formations in connection with the nerves; whilst others have thought they had discovered sufficient changes in the neurilemma to account for the stimulus. Some have considered they could trace a distinct connection between an injury, the disease, and *post-mortem* lesions. Thus Percivall tells us, "he knew a case to supervene immediately after fracture of the vertebræ," and Goodwin, before him, entertained similar views.

Now, I would ask you how far can such stimuli as these be considered as the cause of Stringhalt?

"Experimentally, we know," says Professor Varnell, that "if the *anterior* tibial nerve be laid bare at the part where it crosses the peroneus muscle, about an inch and a half below the head of the fibula, and stimulated by pinching it with a pair of forceps, the muscles it supplies, viz., the peroneus, flexor metatarsi, and extensor pedis, will spasmodically contract, as in Stringhalt. But wholly divide this nerve at the point alluded to, and in a few hours Stringhalt will have subsided altogether, these muscles being paralysed. He, therefore, thought that to cause Stringhalt, some of the fibres of the sciatic must be suddenly irritated, and also that the muscles alluded to are those which are involved in producing this phenomenon." (*Veterinarian*, 1863, p. 592.)

In addition to this experiment, we must also bear in mind, that if a nerve be stimulated in this way it soon becomes tired, and ceases to respond to the stimulus applied; and if the stimulus is not discontinued, the nerve becomes permanently injured (that is, it is paralysed).

Why should not this latter physiological fact be the same in all cases where local stimulation is applied? Some may answer this by saying, that the nerve can be stimulated longer when bathed by the normal fluids of the body and is intact. Be this as it may, it appears to me a very delicate kind of healing process, for the spinal canal or the intervertebral foramen to close just sufficiently, or for a new formation, such as a spicula of bone, to be formed just large enough to produce the amount of stimulus required for such action.

Moreover, we should imagine such irritants would set up inflammatory action in the nerve, in which case it would be difficult to understand, as Professor Dieckerhoff suggests, "how a *neuritis* could cause a permanent increased impulse to the flexors of the limb. Inflammation of nerve is a very painful affection, but Stringhalt is not; and we cannot imagine how an inflammatory irritation of a nerve or its sheath can induce a stronger contraction of the muscle or set of muscles it supplies during work, whilst at rest nothing of the kind can be seen."

Did Professor Spooner consider the ecchymosed condition of the neurilemma of the sciatic nerve to be inflammation? If so, the above criticism is strong evidence against its correctness. Again, Professor Spooner tells us "he never dissected a single case of Stringhalt in which he did not meet with disease of this nerve" (Percivall's "Hippopathology," vol. iv., part ii., p. 385); but Professor Dieckerhoff "has examined numerous anatomy and other horses which had been bled to death, and found this nerve to be hyperæmic without the animal showing the slightest trace of Stringhalt during life." As these statements are made by equally good observers, we must conclude that this condition of the nerve has nothing to do with the production of Stringhalt; unless some material difference can be detected (microscopically or otherwise) between the ecchymosis found by the one and that detected by the other.

With regard to any ulcerative disease of the joints being likely to produce Stringhalt by reflex action, we may, with advantage, quote Professor Varnell's argument upon this point. It is as follows:—"Can we conceive that an ulcerated hock is likely to be the permanent cause of Stringhalt? Is the ulcer to remain

without an extension of its ravages year after year, producing this peculiar phenomenon, without any other inconvenience to the animal? Would not the ulcer, from its tendency to spread, gradually involve the whole or greater part of the articular surface of the bone, and the horse, therefore, become so acutely lame, that he could not bear the slightest weight upon the limb? Or, should the ulcer chance to heal (which is barely possible), and the part become covered with a dense smooth deposit (eburnated), would there then be Stringhalt?" And he goes on to say, "that we may safely banish from our minds the idea of articular ulceration being the cause of Stringhalt" (*Veterinarian*, 1863, p. 593). Mr. Fleming also corroborates this by saying, "One thing is certain, that ulceration cannot exist in any articulation of the extremities, for even a brief space of time, without causing changes which seriously modify locomotion, and induce symptoms and manifestations of pain, which are not observable in, or at any rate are very dissimilar to those of, Stringhalt" (*Veterinarian*, 1863, p. 664).

The supposition "that the ganglionic cells of the cord in connection with the motor nerves supplying the flexor muscles of the hock and stifle being abnormally excited" accords, says Mr. Reynolds, "with the idea that the motor power for each set of muscles is supplied by a special and distinct group of nerve-cells. The correctness of this assumption is supported by the fact that the spasm frequently diminishes in violence after several flexions of the limb have been made, for it would appear that these preternaturally excited nerve-cells after a period of repose, have a superabundance of motor power, as it were, stowed up in them, or in other words, rest renders them more irritable; but after the increased irritability has been in a manner discharged in the production of a succession of moderate contractions, ordinary stimulation only produces normal action, until a further period of rest under undue stimulation has again rendered the cells abnormally excitable."

By this theory we must acknowledge that the animal has control over moving the limb, but does not seem to be able to regulate the force. This agrees with the symptoms observable, and so far as flexion is concerned, but it does not account for the

limb being brought to the ground with increased force. As this is not constantly present, it might be accounted for by the fact that the nerve-centres presiding over the extensors are sometimes similarly excited; or that the animal voluntarily brings these muscles into action with greater energy to overcome the extensive flexion which preceded their action. Moreover, the treatment which has occasionally been successful, viz., division of the peroneus muscle (Boccar), and the fascia (Dieckerhoff), agrees with this theory to a certain extent, for we may say the success was due to the flexors being just sufficiently weakened to prevent the muscles acting so energetically to the stimulus they received. We are not told whether the foot in these successfully treated cases was brought to the ground with increased force. Should this have been the case, it would be difficult to see how, by weakening the power of the flexors, the increased impulse given to the extensors should be also weakened. But if the latter theory given above, viz., that this force is not due to an involuntary increased nervous impulse, but to a response of the will to overcome excessive flexion, we may account for it by the fact that the animal has no need to exercise its will to overcome it, because it no longer exists.

There is yet another possibility (as Mr. Reynolds pointed out in his paper) of Stringhalt being of a nervous origin, viz., that there is a tardiness of action of the nerve-centres presiding over the muscles, or, as I understand it, a defect of co-ordination, or loss of balancing power, in the nervous centres supplying the limbs affected. The animal, as is remarked above, seems to be able to set the limb in action voluntarily, but once the stimulus is given the effect is involuntary, that is, the animal loses control from the moment the foot quits the ground. The same loss of control seems to be associated with extension in many cases. If Stringhalt, however, is due to "loss of co-ordination," how can we account for division of any of the tendons or fascia occasionally curing the effects?

The hypothesis of Stringhalt being of *muscular origin*, (*a*) from "*want of power*" in the antagonistic muscles to those which produce this catching action of the limb from atrophy, is, I think, not substantiated either by observation of the muscles

themselves, or of the symptoms of the disease; for, as far as I am acquainted with the muscles of limbs so affected, they show no signs of atrophy at all, and in those cases where atrophy of these muscles has occurred, no signs of Stringhalt were present. (*b*) That Stringhalt is due to *cramp* of the flexor metatarsi is, I think, very unlikely, because cramp is an acute, painful condition, and does not show any symptoms like those we find in Stringhalt.

If it is admitted that a shortened condition of the peroneus tendon can produce Stringhalt, we shall find some difficulty in accounting for the foot being (in some cases) brought with such force to the ground; unless we argue (as has been done), that it is to overcome the resistance given to the foot reaching the ground. However, I think you will agree with me, that the peroneus takes but a small share in flexing the hock, therefore it cannot play such an important part in producing this malady. And if division of its tendon has been attended with beneficial results, it ought to be attributed to the reason given above, rather than to any direct loss of strength in the muscle itself.

Professor Dieckerhoff's theory, that the limb is forcibly flexed in order to overcome the check given by the shrunken fascia in front of the limb to flexion of the fetlock, and that the limb is brought to the ground with increased force to assist the hock in being extended, is upheld by the symptoms, for both flexion and extension—as a rule—vary in degree with each other, the stronger the one the more forcible is the other. Also his treatment, so far as it goes, tends to confirm its correctness.

As will be noticed, his argument is based upon the idea that the fascia unites with the extensor pedis tendon a little below the hock, and through this acts as a check to flexion of the fetlock. Now, are we prepared to accept this action being normally present? For myself, I very much doubt (although I do so hypothetically) if the fascia is strong and unyielding enough for such action; and even if it were, and did become shortened, one would imagine that in time it would become stretched again, so as to allow of normal action taking place. Again, when this fascia was divided, how was the limb prevented from being rested? For if this were not done, the fascia would

quickly unite again, and make it shorter than before, so that instead of the operation being useful, it would be just the opposite; but how can we account for the operation being successful, as he says it was in two instances?

There is yet another mechanical theory I should like to bring before you, which might possibly account for this affection, and indicate, if not the actual cause, at least an accessory to it. Is there any peculiar arrangement of the bones, ligaments, or tendons of the horse's limbs to account for any especial action taking place in them which is not seen in other species? We are all probably acquainted with the anatomy of the part, but to refresh our memories, I will give a rough outline of it, so far as this peculiarity is concerned. At the anterior part of the limb there is a tendon running from the lower part of the femur to the upper part of the metatarsal bone. This, by English anatomists, is considered to be part of the flexor metatarsi muscle, but to all intents and purposes it is nothing more than a ligament, for it has few muscular fasiculi in the horse (although in cattle and swine it is a well-developed muscle, distinct from the flexor metatarsi). It takes its origin in unison with the extensor pedis at the lower part of the femur, and courses its way down the front of the limb, and at the hock forms a loop for the tendon of the flexor metatarsi (proper) to pass through it. It then divides into three main branches—the external one becomes attached to the os calcis, the centre branch to the metatarsal and cuboid bones, and the internal one to the cuneiform and internal small metatarsal. At the *posterior* part of the limb we find the gastrocnemii, especially the external, which arises from a fossa at the postero-inferior part of the femur, and becomes inserted at the point of the os calcis. Thus we see we have two tendons (one anterior, the other posterior) acting as ligamentous cords from the femur to the bones below the true hock joint. The effect of this is to keep a steady unity of action between the tibio-femoral and tibio-astragalean articulations, or, as I pointed out at the commencement of this paper, by this arrangement the one joint must follow the action of the other. Now, what would be the result if the anterior tendon became unnaturally shortened? The hock would have a tendency to

become sickle-shaped, and the femur to straighten on the tibia. The effect of this alteration in shape would be that the flexors of the tibio-femoral and hock joints would have a greater power to flex these joints, without any extra nerve stimulus or exertion of muscular power being requisite, and the extensors of these joints after strong flexion would have increased force given to them, and the foot would be brought to the ground with more than natural force. If this argument be correct, we see that, owing to this peculiar arrangement, a slight alteration in the tensity of these ligaments (tendons), an increased power is obtained both for flexion and extension, without any alteration in the muscular or nervous systems. It is quite possible, also, that the peculiarity of the tibio-astragalean articulation, with its ligaments, may have something to do with this extraordinary action met with in horses.

If, however, Stringhalt is due to any mechanical defect of this kind, it will be hard to account for it in those cases in which the symptoms are only occasionally seen, and also for division of the tendon or the fascia now and then regulating the action.

In conclusion, I may say that whatever may be the cause of Stringhalt, we cannot expect *neurotomy*, in any form, to be attended with beneficial results, since the only consequence of division of the nerves is paralysis of the muscles these particular nerves supply. If we wholly deprive any muscles or set of muscles of action, the treatment is worse than the disease. What we wish to do is to *weaken* their action, and this seems to be best obtained by dividing their tendons, and preventing union taking place too rapidly.

Finally, I beg to thank you, gentlemen, for listening to this somewhat lengthy, and I am afraid, uninteresting paper, so patiently. I must ask you to excuse any deficiency on my part to make it more so, owing to want of reliable and sound proof to substantiate any of the views proposed to account for this extraordinary unsoundness. Nevertheless, I have endeavoured to bring all the theories I could find on the subject before you, and to criticise them without prejudice. I now must ask each of you to give us the benefit of your experience and ideas, so as to illuminate, if possible, the darkness at present prevailing over the pathology and treatment of Stringhalt.

DISEASES AFFECTING THE LIVER OF HORSES.*

BY J. H. COX, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, ALDERSHOT.

DISEASES of the liver of horses being more prevalent in India than is generally evidenced in temperate climates, I shall confine my observations to the various phases that have presented themselves to my notice in that country. At the same time, the few remarks I have to offer, would indirectly apply to animals not located in the tropics. Considering the amount of liver complications we generally meet with, it has always appeared to me inexplicable that the subject has not evoked from professional men the attention it certainly demands. I do not profess to bring forward anything particularly startling, but shall as far as possible, attempt the elucidation of a few of the well-known facts so patent to those who have studied this subject. The ordinary appellation of the word "liver" is applied to almost any disease affecting that organ, but, perhaps, the commonest form is that recognised under the name of *Bilious Fever.* This is so well-known to Indian practitioners, that a description of it would to them appear futile, but there being others who have not witnessed the various changes which this disease assumes, I venture, without being wearisome, to describe them. Bilious Fever, at certain seasons of the year, and under peculiar circumstances, almost assumes an enzootic form, but seldom under judicious management proves fatal. The admissions occasionally to hospital are so numerous, that a regiment or battery is practically rendered *hors de combat.*

Several causes are brought into operation for its production; the prime factor being the sun and its baneful influences. The disease is most active during the latter portion of the hot season, and just prior to the commencement of the monsoon. At this time, the perspiratory glands are in an exceedingly active state, and anything which tends to check their action speedily manifects itself in some form of Fever. Another fruitful source of the disease, is the vile practice of washing horses; however

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grateful and comforting *pro tem.* to the animals which undergo this process, it is, as far as health and appearance go, open to great objection. Horsekeepers when left to themselves *will* include this part of grooming in their daily routine, but in almost every instance it is an excuse for idleness. No animal can really look well if persistently washed, and the sooner this pernicious system is banished from the stable the better alike for the owner and his slave—the horse. I grant, that in some cases washing may be a *desideratum;* if such is expedient, it should be done under cover and under proper supervision, and not, as is generally the case, in the purlieus of the stable and when a strong wind is blowing. Prevention of disease ought to be the aim of every veterinary officer. By his forethought, sanitary statistics are improved, and the state generally is benefitted, letting alone the *kudos* he gains for himself. Personally, I look upon sanitary science and its collateral branches as the most important part of our duties; and although its observance entails a considerable amount of trouble, I take it there is as much, if not more, satisfaction in being able to prevent as to cure disease. In ordinary routine, extreme measures are unnecessary, common sense only should guide us in our deliberations. In no case does a well-arranged system, carried out with mathematical exactness, pay better that in the prevention of Bilious Fever. Veterinary medical officers should make it their duty to watch the alternations of temperature, and always be on the alert and on the spot to suggest and advise the execution of the sundry preventive remedies, which amply repay them by the success attending their efforts. It is the practice in some parts of India, where out-door picketing is the "doxy," to clothe up the horses during the heat of the day, even in summer. A certain amount of protection to the spinal cord is absolutely necessary, but to clothe the whole body, as if the horse was in the steppes of Russia, I never could understand. This is a practice I have fought against wherever I saw it in existence, and happily have been the means of changing those dogmatic views so tenaciously adhered to by those who happened to be in direct command. By clothing the whole body the horse is rendered uncomfortable; he teems with sweat, which, judging from personal analogy, gives rise to a sen-

sation of weariness, and renders him liable to disease which would not otherwise manifest itself. The plan I find best, and which meets all requirements, is to fold the rug or *ghool* into four doubles and place it along the spine, the roller, if properly adjusted, is sufficient to keep it in position. This mode, besides affording more protection to the spinal cord, is decidedly economical, for in many cases the rug slips round and, instead of covering those parts its use was intended for, we find it being trodden under foot. In the plan I suggest, shifting is next to impossible. Another element which is conducive to attacks of this disease, is stripping the horses of their rugs for watering order, and then allowing them to gorge themselves with water, without afterwards taking the precaution to re-clothe them until stable parade is called. This, as the shades of evening approach, and the wind, especially when the weather is monsoonish, is somewhat lower in temperature, soon counts its numberless victims. I remember on one occasion ten cases being admitted to hospital in one day from this very cause. It requires no intellectual brilliancy to conceive what the result of this fault in stable management would give rise to. The dumb brutes can only by the various processes of rebellious nature, dictate to us the treatment they ought to receive. There they stand with coat erect, arched back, an occasional rigor, awaiting the time when the *syce* (horsekeeper) shall lazily insert his digits between the hair and conduct what represents the system of hand-rubbing. No wonder that nature rebels! Bilious Fever, then, is a disease which can in a great measure be prevented.

The *symptoms* vary, depending on the severity of attack and susceptibility of patient. In many cases we find an increased temperature of body, as indicated by the thermometer, but this is not an infallible guide. Horses there are which present a most dejected appearance, with a temperature nearly normal. The mucous membranes bear abundant testimony that the function of the liver has been materially interfered with, or, as some would have it, arrested; these vary from a greenish yellow with petechical spots having the appearance of extravasated blood, so that blanched or etiolated appearance so pathognomic of the milder form of the disease. The pulse presents in some instances

a most interesting feature, and one which requires extreme nicety in manipulation and observation. In severe cases the heart's action is so violent that its pulsation can be heard several yards away. This functional derangement is doubtless due, like the increased temperature, to the amount of bile or its component parts in the circulatory medium. The slightest noise on the part of the attendant causes the direst confusion on behalf of that of the patient. So extreme is this excitability, that I have seen an animal shake as if in the agonies of death. At this stage the heart's action seems, as it were, to have run riot. The pulse under such circumstances numbers about 150 per minute and very irregular. This undue irritability, after a few minutes' gentle treatment, softens down, and it is then we are enabled to correctly diagnose the true character of this case. This disturbance of the circulation cannot take place without having its untoward effects on the brain and its accessories; these are evidenced in the wild appearance of the eyes, shaking of the head, dilated pupils, involuntary movement of the lips, etc. In other cases of a somewhat milder type, we witness a drowsy appearance, with an evident desire to rest the head on any fixed substance, as if suffering from head-ache. Taking the average cases, that is, the milder forms, the pulse, although increased in frequency, does not present any of those erratic movements described above; it is more inclined to be febrile in character, with an occasional intermission, proving that, even in mild cases, there is some functional derangement of the heart. It averages about 75 per minute. In some instances, the opposite character of pulse is recognised, that is, it does not reach the standard of frequency; we find this in cases of cerebral complications indicated by the drowsiness before alluded to. This condition of pulse is but of short duration, and speedily gives way to one or other of the characteristics described. In almost all instances there is great depression, shown by the general demeanour of the patient. Torpidity of the bowels is one of the leading features, the fæces varying in colour from a deep-red to a light clay colour, and heavily coated with mucus. The tongue is inclined to be dry and hot, and displays signs of gastric derangement. The saliva, after a few hours, becomes ropy and adhesive in character.

The urine, perhaps, of all outward signs, is the one which should lead us to a true solution of our difficulty. Its colour is often what appears to be a greenish black, and stains the ground wherever it flows. It is passed scantily, and occasionally with difficulty, and possesses a Sp. Gr. of 1050 to 1070; when collected and at rest, a thick precipitate speedily appears, leaving the lighter portions of the same colour. At first I was somewhat puzzled to account for this peculiar state of urine, and jumped to the conclusion that I had a form of Hæmo-albumenuria to contend with. In order to ascertain its true character, I had recourse to various experiments, both chemical and microscopical. With the aid of the former I discovered, in some instances, the presence of albumen, with what appeared to be the colouring matter of the blood. The microscope revealed the presence of an undue amount of *uric acid* and urinary deposits generally. Having an idea that the colouring matter might be *Biliverdin*, bibulous paper was immersed, which on being dried gave the appearance of being glazed with a greenish yellow sizing. In a mild attack the urine is considerably heightened in colour, but not to anything like the same extent as in cases of a severer type. The Sp. Gr. is somewhat lower, averaging about 1050. The appetite is most capricious, ranging from partial to total loss, preference always being given to green fodder. Respiration is dependent on the severity of the attack, but "blowing" is an early characteristic of the disease. Pain is indicated by the horse looking round to his right side, with an occasional spasm, as if colic was present. The greater proportion of cases, however, show no disposition to pain, but merely an uneasiness which is not persistent. If relief is not quickly obtained, great emaciation soon follows. These, then, are the pathognomic symptoms which present themselves to our notice.

In the *treatment* of acute cases, prompt and decisive measures are necessary. I have never attempted venesection, having been fairly successful without it, but an old friend of mine says that in acute cases there is nothing to equal it; but considering that the undue excitability is only due to a poisoned state of the blood, and not to any inflammatory action, besides holding in view the

frightful depression which follows, I must confess I have never had the boldness to adopt this mode of procedure. Taking it for granted that the liver is the *fons et origo* of the mischief, we should direct all remedial agents to that organ. Some evince a little diffidence in the administration of the compounds of Mercury where the liver is in a perturbed state; but having no scruples of this kind, I give immediately Aloes ʒv., Calomel ʒij., Ginger pulv. ʒi., in a ball. As an outward application, nothing excels in merit the mustard "pack" over the region of the liver, which is applied as follows: the mustard is prepared in the ordinary way and well rubbed in, embracing a somewhat large area; this is covered with a large blanket soaked in hot water and then wrung out, over this again a dry rag covered by india-rubber sheeting is strapped, the whole being kept there for an hour if possible. The effect in most cases is almost magical, the only drawback being, that if the patient is in the excitable condition before described to start with, it, for a time, rather enhances it than otherwise, but the sequel is most patent. The pulse changes in character, and loses more or less its irregularity; the respiration approaches its normal condition, and altogether there is a species of repose, equally as gratifying to attendant as to patient. Having accomplished this object, the next is to get the bowels to respond. If the medicine does not speedily operate, I find the Magnes. Sulph. ʒij. cum Spt. Æth. Nit. ʒii., Ext. Gentian ʒii. Aqua ʒviii. every six hours, combined with occasional enemata, the best remedy. (A Turkish bath would doubtless operate in a way that would bring relief; but so far, although I have frequently pointed out the good results that would accrue from its presence in every sick lines, Government has not acceded to my request.) Once having obtained a reaction in the liver, that of the bowels follows, and the membranes begin to put on their wonted appearance. At this stage, some cases assume a state of chronicity which is somewhat perplexing. The bowels may be freely operating, the urine better in colour, less loaded with deposits, and micturated in sufficient quantities, still the membranes retain that sickly appearance; appetite capricious, some days a fair inclination to feed, at others none. Under circumstances like these, it is evident that the liver has not regained

its pristine condition. To remedy this, various expedients have been resorted to. If I am not mistaken, Dr. Stewart was the first to inaugurate the Chloride Ammonium era for torpidity of the liver. Since he first gave his experiences to the world, it has undergone an exhaustive trial. Ammonium Chloride is supposed to have a direct action on the portal circulation, which it relieves. Many medical practitioners combine it with Nitro-hydrochloric Acid Dil. and vegetable tonics; others prefer alkalies. For the lower animals I have tried both, and have a decided preference for the alkali combination. Acids, no doubt, act as a tonic, and assist gastric digestion; but as derangement in this particular is the sequel of a disordered state of the liver, I contend that our efforts should be confined mainly to the direct restoration of that important organ. The following is the formula I generally adopt, and which has proved successful:—Ammon. Chloride ʒiv., Potass Bicarb. ʒiv., Ext. Gentian ʒii., Aqua ʒviii. every six hours. For local applications, I use the Nitro-hydrochloric dil. bath over the region of the liver every few hours; after a few days a slight tenderness, followed by an eruption, is observed, when it should be discontinued for a short time. A week or ten days' treatment of the above nature often suffices to restore the action of the liver. Where the patient has become much prostrated, a course of "pick-me-ups" should be gone through. The compounds of iron naturally suggest themselves, but somehow, after liver cases, they do not seem to bring about restoration of the system in a manner one would wish, and latterly I have discarded them, giving in their place Caffeine, alternated with Ammon. Carb. Caffeine, I have practically proved, both in horses and dogs, to possess specific properties as a restorative in febrile diseases; it acts slightly on the urinary organs, and is a stimulant to the various nerve centres, and so indirectly on the liver. Its cost, unfortunately, militates against its universal adoption. I give in the morning, in the form of a ball, Ammon. Carb. ʒij, Gentian Pulv. ʒij, Ginger Pulv. ʒij; in the evening, Caffeine ʒss., Ginger Pulv. ʒii., Chiretta ʒij. I need scarcely add that good dietetic arrangements stand paramount. As nature demands green food it should be given, and for this purpose there is nothing better, if green grass is not available,

than a few pounds of lucerne or guinea grass daily; roots of various descriptions will also be relished. It must be always borne in mind, that as the system has gone through a trying ordeal, so in accordance must be the rest afforded for the repair of tissue.

This part of my subject would not be complete were I not to give the results of *post-mortem* examinations. These, happily, are not often forced upon us when remedial agents can be brought to bear in anything like reasonable time. When death does ensue, it is doubtless from direct blood-poisoning, producing an excess of those violent convulsions of nature one has only to witness to remember. On making a section of the various parts of the body, I was struck with the colour which pervaded the whole. Mucous and serous membrane, adipose and muscular tissue, all seemed to be impregnated with this greenish-yellow tint. The endocardium was covered with petechial spots, in some cases isolated, in others coalescing. The spleen, perhaps, showed the greatest signs of change owing, it may be, to its mysterious attempts to stem the tide, and put a check to the ravages of the enemy which had made its appearance. It was in itself hypertrophied and the intercellular tissue was easily broken down. The liver did not reach the dimensions the severity of the attack would lead one to suppose. It was, however, enlarged and changed in colour, but nevertheless firm. Sufficient time had not elapsed for any structural change to take place, other organs were healthy, except that they partook of the colour before described, but in a milder degree.

Why the absorption or the non-elimination of bile should in some cases produce cerebral disturbance, while in others, although the blood, judging from outward appearances is saturated with it, there is an absence of any signs which would lead us to suppose that the brain is directly implicated, does not seem to be thoroughly understood. Dr. Murchison, speaking of Jaundice, says, "Under normal conditions the whole of the bile that is absorbed is at once transformed, so that neither bile-acids nor bile-pigments can be discovered in the blood or urine, and there is no Jaundice. But in certain morbid states the absorbed bile does not undergo the normal metamorphosis; it circulates in the

blood and stains the other tissues." That the urinary secretion is regulated in colour, density, etc., by functional or structural derangement of the liver, is a well-known fact. If the theory is true, that blood pigment is converted into bile pigment, and that of the bile into urinary pigment, and if we go a step farther and believe that the red corpuscles of the blood are disintegrated in their passage through the liver, and that the colouring matter of the urine is regulated in amount by these forces, we may fairly assume that the greater disturbance in this particular, the more evidence shall we have in the urinary secretion. Whether the pathognomic state of the membranes is due to the non-elimination of bile from the blood, or to its absorption after elimination, is a question open to discussion. My opinion is, if we take it for granted that if the greenish-yellow colour so characteristic in these cases, is allied to *Biliverdin*, it must be that the bile has been eliminated and re-taken up; for it is now understood that Biliverdin is formed from the blood or blood pigment in its passage through the hepatic cells. It may be, that after the cause of this disease has come into operation, the function of the liver is not arrested, but enhanced in proportion to the elements in existence necessary for the production of this morbid change; and having no receptacle in the way of gall-bladder for any superabundance of bile, the surplus is thus absorbed and taken up by the blood, and not being transformed as in ordinary cases, but rather decomposed, and thus giving rise to a train of symptoms described in the severer forms of the disease. The only objection to this theory lies in the fact that great torpidity of the bowels is often present, which, presuming we had a preponderance of bile, some of it would naturally find its way into the intestines, thereby increasing the peristaltic action, and bring about an opposite state to that of torpidity.

I will now pass on to the consideration of another form of liver complication, which may be designated as "*Functional Derangement*," as evidenced in *Bilio-Catarrhal Fever*. In order to make myself thoroughly understood, it is advisable that I should here briefly allude to some of the functions of this important organ—the liver. The secretion of bile, although very essential in itself, is only one of the many duties the liver is called upon to perform.

Amongst others, I may state, is the one of building and storing up that peculiar protoplasm allied to dextrine, and called *Glycogen.* We are assured that this glycogenic function is one of the most important. In it we have a reserve from which is drawn two elements necessary to support the body—*i.e.*, sugar and fat. This formative process of supplying a substance easily disintegrated by the albuminoid ferments which the liver brings into play, is one of paramount importance. For you will quite understand that anything which interferes with this necessary change, tends to disturb the harmonious balance essential to the animal economy. Nature, however, is all-powerful, and it is only when she has become overburdened that we are enabled to take cognisance of the results. Another important duty of the liver, is that peculiar power of breaking up over-fibrinated blood, and the destruction, in a measure, of the red corpuscles. If such is the case, we cannot wonder that this organ is often on the verge of passing from a physiological to a pathological condition. These, then, are some of the duties which the liver is continually engaged in. We will now consider the causes in operation likely to produce an altered state of these functions. Horses, unlike most men, undergo a certain regimen in diet. As a rule, they are not allowed to indulge in any of those erratic departures from a well-established system, which is too often the case in the higher order of animal mechanism. Most practitioners in this country are conversant with the causes and symptoms as pourtrayed in the pathological condition known as *Bilio-Catarrhal Fever.* We know that this disease in its inception appears to be generated by a species of contagium, assuming in some cases a somewhat mild type; in others, a severer form. I do not purpose treating of Bilio-Catarrhal Fever as a separate disease, but I shall only allude to it in connection with our subject of Functional Derangement of the Liver. In following the course of any epizooty as affecting the equine tribe, we do not find that the symptoms in every case are by any means analogous, but vary in proportion to the severity of attack. We, nevertheless, are able to classify certain signs which may be formulated as a guide to correct diagnosis. Catarrhal Fever, with its concomitant symptoms, having established itself, in what relation, and how does the liver participate

in the attack? Various theories may be promulgated as to the *modus operandi* in which this organ becomes temporarily deranged. I have heard it stated that it is simply an extension, as it were, of the form of Catarrh to the bile ducts, following as a natural sequence the ordinary workings of Nature. However tenable this theory may appear at first sight, it will not bear investigation; for if such were the case, the simple forms of Catarrh would produce, in many instances, similar results; *ergo*, we must look elsewhere for a true solution to the problem. This I am inclined to believe may be arrived at from the knowledge we possess, that this form of Catarrhal Fever is, if I may so call it, a special disease, having doubtless for its production a well-arranged but unknown code of causes. If we look upon this affection as something more than that produced by local factors, we can at once understand why the liver participates in the attack. Bearing in mind that this organ acts as a great blood purifier, it requires no great stretch of imagination to understand that its functional derangement is brought about by an empoisoned state of the blood. As evidence of this, we know that in tropical climates, where attacks of Malarial Fever in human subjects are prevalent, the liver soon displays evidence of disease. This I look upon as the cause of functional derangement of the liver, accompanied by that special or contagious form of Catarrhal Fever. It is interesting to study what this disordered state amounts to. If the same animal had frequent attacks, we might reasonably conjecture that disorganization of all structure had taken place; but we do not find that horses habitually suffer from this form of Fever. We can then only look to a much simpler morbid condition in order to explain this altered function. Considering the somewhat mysterious workings of the liver, we might indulge in a dozen fantastic theories; but as far as I can see, it resolves itself into merely one of venous congestion, which is set up by an undue amount of morbific matter in the blood. I am led to this conclusion, that with judicious treatment, aiming solely to get rid of congestion, relief is speedily afforded. The *symptoms* generally are well known to you, so need no description. The *treatment* must be regulated by the nature of attack, but what are called liver stimulants should be administered. It is erroneous to

imagine that the various agents we employ have a direct action on the liver; such is not the case, for they indirectly only expedite hepatic secretion and thereby relieve congestion. This question need not very much exercise our minds, so long as we obtain the desired end. Owing to the liability of Catarrh to extend itself to the various mucous membranes, purgatives in all cases are inadmissible. Were we treating a simple case of Congestion of the Liver, our measures would be framed accordingly. But having a set of symptoms really requiring antagonistic remedies, we are compelled to exercise extreme caution. Under all circumstances, however, there can be no objection to the administration of small dozes of Calomel, *e.g.:* A scruple morning and evening combined with vegetable tonics, providing it is not persevered with too long. If any aperient is necessary, small dozes of Magnes. Sulph. cum Spt. Æth. Nit., combined with enemata, may be advantageously employed. Occasionally the catarrhal symptoms disappear, but still the liver is sluggish. In these cases I should certainly administer Ammon. Chloride and alkalies, as suggested in Bilious Fever. A draught morning and evening, with a ball at mid-day, composed of Quinine Sulphate ʒi, or Caffeine ʒss., Chiretta ʒii. Ginger Pulv., ʒii. would meet with success. Chiretta is supposed by some to assist hepatic secretion; whether this is true I know not, but at any rate it is a valuable tonic. It is not often necessary to adopt any local remedy; if such is expedient a mustard pack, or the Nitro-hydrochloric Acid Dil. bath should be had recourse to. As a rule, good hospital management tends soon to establish convalescence. I wish to draw your attention to another form of liver derangement, viz., Iodiopathic Congestion. This is often met with as a disease *sui generis*, being separate and distinct from that form of congestion seen in the diseases before described. The effects are observable in two classes of horses, *i.e.*, in plethoric animals on the one hand and in debilitated ones on the other. The high state of domesticity which some horses are apparently subjected to, is not always conducive to keeping the motive springs of health in that condition necessary to withstand the attacks of functional derangement of any organ. Hence we have in overfed and underworked animals a disposition to liver disease,

not apparent in those which undergo a fair amount of exertion, with only sufficient food to meet the requirements of tissue change. These attacks are often insidious in their nature and behaviour, and require a somewhat large experience to correctly diagnose the changes which have taken place. In all liver diseases in horses, we meet with insuperable difficulties not in force in the human subject. In the latter case, the degree of hepatic dulness can be ascertained to a nicety. The oppression or fulness in the right hypochondriam is fully described. The integument being generally devoid of hair, is often an index as to liver derangement. The lower animals, on the contrary, do not indulge in articulate expression, as conveyed in words, consequently cannot describe the fulness here, or the tenderness there. Percussion does not give the same satisfactory results. The colour of the skin militates against our using it as a medium by which we can arrive at, with other appearances, definite conclusions. We, nevertheless, have prominent symptoms which afford us valuable aid. The mucous membranes, especially the conjunctival and buccal, are, perhaps, the first to register the attack, and give us evidence of hepatic derangement, be it functional or organic. The kidneys, owing to their co-operation with the liver in the metamorphosis of tissue, display by altered secretion their affinity for morbid biliary products. The urine in the lower animals is, in my opinion, not sufficiently studied, or we should oftener find that certain diseases, which present no prominent features, would be more easily understood. In this disease its colour and density are often altered; so much so, that its varying conditions enable us to arrange our thoughts in proper sequence as to the duration of attack. Were it not so, functional change and disorganization would be a sealed book to us. If I may be allowed to digress, I would remark, that in testing the density, colour, etc., of horses' urine, care should be taken that the conditions of each operation are the same, otherwise an erroneous conclusion may be arrived at. Before I specially gave my attention to liver diseases, I examined the urine of every horse in my late regiment before and after watering order, and a considerable variation was discovered. The surrounding temperature, as also that of the urine itself, should be taken into

consideration, as deviations in this particular may alter the buoyancy of the fluid. These details may not appear to be very forcible, but are absolute where correct observations are to be recorded. A register of the urine should in all cases be kept, with respect to its density, colour, and reaction; and annotations should be made of the changes which occur from day to day. In the case of plethoric animals, this disease—Idiopathic Congestion—is induced by an overplus of nitrogenous and carbonaceous materials introduced into the system. A great portion is doubtless voided as excrement, but the remainder must, in the ordinary course of nature, be taken up into the blood and disintegrated in its passage through the liver. This organ, we are aware, varies not only in dimensions, but also in its capabilities of sustaining the work thrown upon it; or in other words, some livers can perform more work than others of the same size. When an undue amount of crude material is thus pressed forward in order that the liver may exercise its function, we find that it is unequal to the task, and thus becomes temporarily deranged. Its auxiliaries, the kidneys, come to the rescue, and as a sequel we have demonstrative proof that, in some cases, the destructive process has not been carried out in accordance with the laws of nature. The abnormal products often formed are albumen, and a preponderance of urinary deposits—urea and uric acid, which do not form so characteristic a feature in equine as in human urine—have become associated with this change. The quantity of the secretion is somewhat decreased, and its colour is heightened, owing to the presence of pigment in abnormal proportions. Torpidity of the bowels is also present in many instances, the fæces possessing the ordinary features resulting from hepatic derangement. The mucous membranes are a pale yellow in colour, and do not possess that fresh hue which denotes health and vigour. What are called constitutional symptoms are not always present. The pulse is rarely a guide; although it may be quickened, it possesses little or no indication of severe suffering. The tongue is furred, and covered with ropy saliva. The lining membrane of the mouth, fauces, etc., is in some cases reddened, and approaches pustular eruption. But this is not a frequent symptom; when it does

exist, it bears evidence of gastric derangement. Percussion avails us little; pain is not by any means common; the appetite is capricious, preference being given to green fodder, and a consequent loathing of corn. Lameness in the off fore-leg is sometimes present, but out of the many cases I have witnessed this symptom has only twice been observed. The animal is generally dull and listless. These signs will, as a rule, prove sufficient, if carefully observed, to diagnose this form of liver complication. Very nearly the same conditions are distinguished in debilitated horses, when the debility is consequent on the chronic state of congestion, whereby assimilation is impeded. So what, *in initio*, might have affected plethoric animals may, by its continuance, render them astheniated. The *treatment* is similar to that adopted in the cases before enumerated, but often requires perseverance to overcome this habitual congestion which seems inherent in some animals.

There are other forms of liver disease which I should have wished to have noticed, but time will not admit of my doing so.

CATALEPSY IN THE HORSE.

BY M. J. TREACY, M.R.C.V.S., INDIANAPOLIS, U.S.A.

THE records of veterinary literature, as far as I can ascertain, do not mention anything of the above; hence the following interesting case is worthy of being noted.

A few weeks since, a handsome bay gelding, five years old, was sent to my hospital with the following history: Had been purchased a short time, frequently shown symptoms of staggers, and on that morning whilst working had suddenly stood perfectly rigid and still, and seemed powerless. His pulse was sluggish, full, and numbered 30; temperature, 101·3°; the prehensile powers of his lips were very weak; he took half an hour to drink one quart of water. Diagnosis: brain trouble. Treatment: An eight-dram aloetic pill and one ounce of Potass. bromide three times daily, with plenty of cold water within reach, and soft food. He continued dull and mopish for four days (bowels responding actively to the pill), with his head pressed against

the stall continually. I then suggested setoning and blistering his head, to which his owner would not consent, and at his request I had him slowly exercised in our presence. In a few minutes he carried his head upwards and stepped as if he were blind, and suddenly stood still and rigid as if shot, with the near fore limb pointing forward. I pulled his head to his shoulder, and there it remained. I pulled his ears down, and they remained so—in fact, any of his limbs would remain in the position they were placed. This condition continued for about twenty minutes, when he was led to his stall, where he slowly recovered his senses. Unfortunately, he was removed and sold to a farmer, so that I could not trace this very interesting case further.

ANTHRAX FEVER, OR LOODIANAH DISEASE, IN INDIA.

BY J. MILLS, M.R.C.V.S., A.V.D., INDIA.

(*Continued from page* 22, *vol. xii.*)

Prevention.—Before going into the subject of prevention, I will give a brief outline of what was done at Bareilly.

On my arrival at the station, on the 8th October, 1877, I found the horses picketed in dangerous proximity to their stables; therefore, knowing that the first thing to be done was the speedy removal of those not yet affected to a position where plenty of fresh air could be procured, I at once suggested their being taken to a "tope"* at some considerable distance from their lines, and which was elevated, and apparently healthy, and well exposed to the prevailing winds. My suggestion was carried out on the following day (the 9th). One case occurred the next day after their arrival at the tope, but it was of a very mild type. Here the disease was checked, as no more outbreaks took place.

The floors of the stables were lifted to a depth of one foot, and relaid with fresh earth and kunkur.†

* A clump of trees.

† Kunkur is regarded as a deposit of the Drift period, is of a light-brown, reddish, or ash-grey colour, and rarely fossiliferous. Its usual composition is —Carbonate of lime, 70 parts; silica, 13 parts; alumina, 17 parts It is principally used in making roads and forming an impermeable flooring for houses and stables.

The mangers were entirely removed, and the head-rope pegs taken up and replaced by new ones. The walls of the stables and all the other buildings in the lines were whitewashed.

The manure-heap was removed, and the manure carried to a farm at a considerable distance from the lines, and the soil on which it stood was dug up to a depth of four feet, and fresh earth substituted for that removed. The grass-cutters' ponies were shifted to another standing, at some distance from the stables. No trees were cut down, but all the long branches were lopped off.

A committee was formed, which recommended that the centre division stable be pulled down and a new one built on a portion of ground on the other side of the road, so as to allow of more room. They also recommended that proper drains be laid. The stable was not pulled down, nor a new one built. Brick drains were laid, but were of no use whatever, from the flatness of the site.

The remarks which I am about to make regarding the prevention of Loodianah Fever may not only be considered applicable to that disease only, but many of my suggestions may with advantage be employed in the prevention of disease in general.

It is not, however, my intention here to present a long dissertation on the preservation of health by means of a proper diet or a proper system of sanitation, or to lay down laws as regards exercise, etc., etc., as that subject has been fully gone into in Mr. R. Poyser's able essay on "Stable Management in India," and which I would recommend every one to peruse who desires further information on the subject. But having gone into the causes producing this disease, I must be pardoned if I touch slightly on stable management in general, as I find its proper application so potent a factor in the prevention of this malady.

What is required is a careful and judicious administration of the means at our disposal for the wants and comforts, as well as the health of the animals under our care. This will effect a great deal, not only in preventing the occurrence of disease, but also its diffusion when it has broken out, as well as in removing many of the causes supposed to engender it.

It is our duty to frame "health laws" and to see them rigidly enforced. The antiseptic regimen and conditions are the best

preventives of this disease—in fact, whatever is most conducive to health should be observed.

My remarks, firstly, will be confined to what, in my opinion, ought to be done to prevent an outbreak taking place; and, secondly, what to do to prevent its diffusion when it has broken out.

Locality.—The choice of a proper site, in a good healthy locality, on which to erect stables, is of paramount importance. A situation, therefore, ought to be chosen which is as high and dry as possible, and where the air has free access. And let us bear in mind that it is an universal principle that all animals will thrive much better in open, high, dry, and extensive surroundings, than when they are confined in a small space, although it may not even amount to overcrowding; on a portion of damp, undrained land, however well they may be fed and cared for, they will become diseased. In our selection we must not only provide for the present, but for the prospective wants of the situation, to secure the essential objects of ventilation, drainage, etc., and in that way its consequent salubrity, and also to choose such a place that we can provide any additional improvement that may become necessary from time to time.

Prior to building it would seem to me to be most essential to make a full and searching inquiry as to what use the ground had been put to, and, further, to ascertain if there are any objectionable surroundings.

In conclusion, particularly avoid a situation which has the character of being malarious, as the septic and putrescent tendencies are more strongly developed there than in elevated positions, and are consequently most undesirable.

Stable-buildings.—My experience of India convinces me that stable architecture may be made to contribute much more to the health of the horses that become their inmates than they at present do. Their construction in many instances is defective, in not giving sufficient cubic space, and in being built too closely together. Of late years, however, great improvement has taken place in the building of stables, but extensive as that has been, still they are yet anything but what they ought to be.

In time properly constructed stables would pay for their erection by the benefit that would accrue from their use.

I certainly think that the massive brick erections at present in use are quite unnecessary, as horses in India only require protection from the rays of the sun, and nothing more, the cold never being so intense that it cannot be combated by warm clothing. Therefore all that is required is simply a kind of open shed, with a thoroughly sun-proof roof; and I would say that everything which interfered with the free circulation of air should be swept down with the "besom of destruction."

The brick walls and uprights ought to be replaced by iron pillars sufficiently strong to uphold the roof.

The advantage of iron, in a sanitary point of view, in the construction of a stable is at once apparent. It is non-absorbent, and when coated with tar or paint can be washed clean when occasion arises; and being a strong, compact body, it is capable of greater strength in a given space than bricks. Consequently, these immense air-obstructing uprights can be dispensed with, and replaced by a light column of iron.

Of course, I am well aware that the primary cost of iron would be considerably in excess of brick, but the former would not require the constant repair of the latter, and would last much longer. Then, again, look at the benefit to health that would take place, and in that way there would be an ultimate saving to the Government.

I will now consider what kind of a roof ought to be employed.

Thatch is a capital non-conductor of heat, and would make an admirably cool roof, were it not that it becomes saturated with wet, rots and decays, and gives out malaria just as any other decaying vegetable matter would. It also becomes the habitation of rats and other animals, which in time render it foul.

Tile roofs are the most common in use, but they become very hot, and do not cool down sufficiently quick.

What I feel inclined to think would form a good cool roof would be one composed of teak or some other compact wood, two inches thick, covered with felt, and over which, with a space of eighteen inches between, have corrugated galvanized iron, so as to form, as it were, a double roof. This intervening space will be found to act most beneficially. There should also be a

ridge ventilator, constructed for the purpose of giving exit to the foul air of the stable.

The roof ought to be made wide enough to form a verandah. Many will, very likely, say how hot the iron is liable to become; but then, again, on the other hand, how rapidly it cools; and if it were to become excessively hot it would never affect the horses in the stable, as the vacuum between the iron and wood prevents anything of the kind happening.

We come now to the most important consideration of all, viz., the foundation and flooring. A foundation, to be good, must not only be sufficiently strong to bear the superstructure, and of sufficient depth to cut off all connection with the surrounding soil, but it must also be constructed of materials calculated to resist moisture. The best materials for this purpose are concrete and sound bricks partially vitrified in the kiln. If such bricks be well laid with mortar composed of sharp sand, containing no vegetable substances, and the concrete be free from earthy particles, well mixed, and firmly thrown down together, the admission of damp will be entirely avoided, and this is one of our main objects; as without a dry foundation a stable can never be healthy. Stone, chalk, bricks which have not been properly burnt, and impure mortar have all a tendency to absorb moisture, which, if once received by such materials, ascends, or "creeps up," as it is technically called by builders, and thus affects the whole building.

The foundation and flooring of the stable, with the outside standings, ought to be raised at least two or three feet from the ground, to serve the twofold purpose of a rapid outflow for the drainage, and to prevent inundation during the rains. As to the flooring, if expense was no object, I should feel inclined to have the stable laid throughout with "terra-metallic clinkers," as they possess the advantage of being cleanly and durable, and if properly laid on a concrete bed of quicklime and gravel, are perfectly impervious to moisture or urine, which is just what is required. I calculate that these floors laid with clinkers would cost about £5 5s. each stall: thus—cost of clinkers at home, per thousand, 35s.; carriage out to India, and laying, say, 35s. more; and it would take about 1,500 of them, measuring 6 in. by 1¾ in. to floor each stall.

This may seem very expensive indeed, but the loss by the two outbreaks at Bareilly, in 1877 and 1878, would just have paid for ninety-two stalls being laid with clinkers at £5 5s. each stall. However, not having yet arrived at the age of "clinker maturity," we must be content with the articles at our disposal for floor-making, viz., kunkur, lime, broken bricks, charcoal, and sharp sand, formed into a kind of concrete, and well rammed down into a compact mass, with a fall of half an inch to the foot for drainage purposes. Unless these floors are thoroughly rammed down, and allowed to stand for a considerable time to harden before the horses are put into the stables, the result will be unsatisfactory, as, from the great moving weight of the horses, if put in too soon, the floors will soon become a mass of holes, forming nothing more or less than small cesspools.

Drains.—Drainage, to be effective, must serve two purposes—firstly, to carry off fluid impurities; and, secondly, to secure the stables and their surroundings from inundation during the rains.

Good drainage in some instances is very difficult to procure, but of course it entirely depends on the site; where a sufficient fall can be obtained to secure the desired rapidity of outflow, I should recommend that a "pucca" drain be laid, 3 ft. wide, running with a rapid slope between the inside and outside horse-stands; and also that the outflow of each of these drains be secured by a continuation of drainage, leading to the main line of surface drains. But however flat the site, an endeavour ought always to be made to construct a system of drainage to carry off the liquid refuse of the stable, and to prevent the lodgment of rain-water.

All drains should be carefully bricked and cemented, lest the foul water they contain should ooze through and pollute the soil below.

In form the drains ought to be saucer-shaped, smooth, and beyond all, avoid many joints in them, as they are so liable to become choked with the *débris* of the stable.

And, lastly, the drainage of collected water, wherever it may be, either near to or at a distance from the stables, must be carried out to ensure atmospheric salubrity. You may, however,

drain the surroundings as much as you like, but unless the stable itself is healthy, any amount of external precautions will be of no avail whatever in averting the cause. There must be a combination of preventive measures planned, so that the one will scientifically and practically harmonise with the other.

Ventilation.—We are well aware that a sufficient and well-regulated supply of pure air is one of the most essential conditions for the maintenance of health, as without it we lay the system open to the attacks of every disease horseflesh is heir to.

To prevent the foul air of one stable from reaching to the one next it, and to ensure free ventilation, they ought to be built in *echelon;* but I am sorry to say that in many instances in India this simple precaution has not been adopted.

The long ridge ventilator is the best for the roof, and ought to be made very wide, so as to give ready exit to the ascending air.

In ventilating a building we must not only try to get rid of the impure atmosphere it contains, but we must also endeavour to introduce pure air into it; and I can only lay down one rule regarding fresh air, and that is, wherever it is to be found *utilise it.* It cannot be too strongly impressed on the minds of those connected with horses in India, that to try to purify the atmosphere of the stable is to seek health for the animals under their care.

At certain seasons of the year it is an utter impossibility to obtain any ventilation whatever, as the elements, one would think, were at a standstill. Therefore, during the seasons when this takes place, viz., about the end of the hot weather, and during the rains, the only thing to be done is to picket the horses out as much as possible.

Cubic Space.—To avoid overcrowding, the stables must give ample cubic space. Strange to say, on comparing the cubic space allowed to the troop-horses at home, and to those at Bareilly (and the stables at that station may be taken as typical of those found in most parts of India), I find that there is only the difference of a few feet. Thus, cubic space at home per horse is 1,605 ft., and at Bareilly 1,614$\frac{2}{3}$ ft.; or just 9$\frac{2}{3}$ ft. more than that allowed in the English troop-stable. Therefore, from the above comparison, I hold there is room for improvement.

I should say that in India the cubic space allowed per horse ought to be at least half as much again as it is at home, or not less than about 2,400 ft., as in a smaller space it is an utter impossibility to keep the air of the stable pure.

Mangers.—The construction of mangers ought not to be allowed, as from the porous mud they are composed of they very soon become foul, and in that way engender disease; and, further, they are quite unnecessary while nose-bags are in use.

Sanitation.—The general sanitation of the stable and its surroundings, must be carefully observed and secured by proper supervision. The floors, outside standings, and drains should be swept out twice a day and all refuse removed.

As regards the collection of urine, when a horse is micturating, if the syce is in the stable he ought to collect the urine by means of a small chatti* held under the horse. This urine ought then to be transferred to a larger vessel, and conveyed two or three times daily to the manure heap.

If it be not practicable for the chatties to be used, the next best thing is the dry-earth system. There ought to be a little clean earth always handy behind each horse, and when he urinates sufficient ought to be thrown on it to absorb it. This earth, now saturated with the urine, must be scraped up and deposited with the dung, as if left it only becomes trodden down into the floor, and in that way pollutes it.

The droppings should be collected as soon as they have fallen, and put into baskets to be carried to the manure heap.

As regards the position of the manure heap, I decidedly consider it should be at least 1,000 yds. from the stables or lines, and placed in such a position that the prevailing winds will waft the effluvia it gives off in an opposite direction from that of the lines; and the manure ought to be sold to some of the neighbouring ryots,† so as to ensure its frequent removal, as it is most injurious to allow it to accumulate; and providing it cannot be sold, the best plan is to burn it as soon as it becomes dry enough.

* An earthenware basin or vessel.
† A farmer, tiller of the soil.

(*To be continued.*)

MELANOSIS.

BY RICHARD W. BURKE, M.R.C.V.S., A.V.D., LIMERICK, IRELAND.

THERE are many who look upon Melanosis as not having any direct connection with Cancer, and the reason for this is obvious and easily explained. It is simply this, that viewing a disease from varied standpoints, as different men do, the majority of all such as assert that it is not of a cancerous nature look at it from an abstract clinical point of view; and this fact is an admission that the pathology of that disease receives but scant attention at their hands, inasmuch as "clinical" men hope to arrive at a correct knowledge of the pathology of disease by a study of its symptomatology only. Until recently, as we are aware, the veterinary profession, as well as the medical faculty generally, were accustomed to arrive at their results through a similar process. The subject of pathological anatomy has, however, lately ripened, and the better pathologists have brought themselves to place a greater reliance upon its teachings than on those of symptomatology. The point of view, moreover, of the clinical observer is that merely of a specialist, and we are all conscious, no doubt, of how impossible it is for a specialist to attempt to dictate to a profession; and further, we venture to think that his success, did he succeed, would be a short-lived one. Any one-sided knowledge unquestionably has its dangers; and it is a question if, at its best, it is better than no knowledge—at any rate, it should not be suffered to represent merely convenient opinions concerning the solution of questions of wide significance as a cloak to cover the knowledge of nothing, while those who continue to pose in their exclusive clinical victory must remain unfettered by any control of science. The surmise of the clinical observer, then, and one who assumes the *rôle* of an expert specialist, is restricted to the narrow limits of the *physical characteristics* of the disease itself. His objection is that Melanosis is too modified in its form for Cancer; that an animal may be covered with melanotic tumours, and may yet exist for a long period. Lænnec, who was one of the first exponents of this disease and its results in man, has already observed that the melanotic symptoms are very obscure; that the disease is unaccompanied

by fever, and exhibits little or no emaciation until the later stages; that it is in many cases not capable of detection during life; that when detected it scarcely ever suggests indications for treatment; and that it is a disorder more pronounced in old rather than in young age. Now, this is exactly what the clinical observer of the equine patient signally maintains. We are all agreed that it is the more pronounced in old age, and that it rarely undergoes a process of softening and expulsion until it has existed for a lengthened period of time. As I have observed, since the inception and development of the subject of morbid pathology, its exponents have given to *post-mortem* appearances of disease a greater importance than heretofore; and it has been conclusively shown that Melanosis, whether occurring in horse or man, is liable to systemic invasion—that is, it slowly but surely produces similar tumours in internal organs and remote parts. And this malignant tendency of the disease allies it in its nature and kinship to Cancer. It was the general opinion of even the earliest observers in our own profession, that external Melanosis was liable to secondary internal lesions in the various viscera of the animal; and we find Professor Dick writing upon this point in the *Lancet* so far back as some thirty years or more ago, where he assumes the *rôle* of an anatomo-pathologist in making this clear.

We have still another proof of the cancerous nature of Melanosis, in the fact that so long as the tumours are left to themselves they remain in a quiescent condition, but that as soon as any irritation be applied, whether surgical or otherwise, they re-assert their activity. Histologically, too, we find that Melanosis, equine or human, presents all the characteristics of Cancer. Mr. Meyrick, who recently adverted to the subject of this disease in his paper on the "Soundness and Unsoundness of Horses" has defined it to be "simply a collection of the dark pigment cells that are usually confined to the skin, iris, and the more externally situated parts of the mucous membranes." Now, I contend that the disease is something more than a mere collection of pigment cells. It is an absolute outgrowth of pre-existing normal tissue, which to the pathologist is something very different to a mere collection of pigment cells; and for the reason that

the one is hypertrophy, the other infiltration, the former always preceding the latter. Further, that which is hypertrophy is hypertrophy of normal pre-existing tissue—both interstitial and adjunctive constitute a distinctly new product, new developments of the part, or a true zenogenesis (the generation of something foreign), and corresponding to some distinct purpose. There obtains in melanoid tissue "pigment cells" and an abundant *stroma* withal. Surely, then, it does not savour of temerity to assert that Mr. Meyrick's definition of Melanosis is conspicuously deficient in accuracy of exposition, from the point of view of its histology; and as such we must regard it—for while it takes cognisance of the former, it leaves wholly out of consideration the questions which surround a plausible explanation of the latter.

It has been said that melanotic tumours in the horse never, or at any rate very rarely, ulcerate. This is not, or ought not to be, matter for surprise, for we are aware that all cancer-structure, unless richly cellular in its constitution, seldom or never ulcerates, until and unless irritation be brought to bear on it. We must bear in mind the fact that melanotic tumours consist for the most part of fibrous tissue, and not wholly of the "pigment cells," about which all may satisfy themselves who choose to do so by microscopic examination. Of course, no two cases are identical, and so we find that in certain instances we have melanotic tumours that are very prone to ulcerate, even when of a not long existence; while its general reluctance to present an early tendency to ulceration, by inducing any irritative changes in surrounding structures, marks its further analogy to Cancer, which spreads, as has been maintained by some of our best authorities in this country and on the Continent, by a process of conversion, and not by inflammatory degeneration.

Considering the possible malignant characteristics, then, of the disease, I should consider, contrary to the views of some authorities, that an animal in this condition would be rightly pronounced to be legally unsound, knowing its liability to internal invasion at some remote period or otherwise.

There are some practitioners who contend that lymphatic contamination implies an all-important characteristic of Cancer, and that an absence of this in Melanosis denotes absence of proof

of the relationship that subsists between the "two diseases." This is a mistake, however, which it is important should be dispelled. The estimate of Sir James Paget,* Van der Kolk,† Professor Benedict,‡ and others, is a sufficient argument against the propagation of the disease by absorption effected through the lymphatic system, for although it may occasionally be so conveyed by the lymphatic ducts in their usual functional way, this is not necessarily its means of conveyance; if it were so, we should expect to find the neighbouring lymphatic glands contaminated with cancerous particles in the course of a few days at most, if not earlier, certainly in a very early stage of the disease. Bastian§ says: "Neighbouring lymphatic glands become affected in the case of tubercle and cancer growths, just as they do where simple inflammations exist, and just as the change in the gland in the case of inflammation must be regarded as the result of a mere induced morbid action, rather than as the product of a multiplicative reproduction of a transmitted germ, so is a similar explanation open in the case of cancer and tubercle." While another authority‖ concludes: "An absorption of cancer cells by means of the lymphatics cannot, indeed, in itself be ranked amongst impossibilities; but, at all events, this much is certain, that no propagation of the disease can take place until the lymphatic glands have in their turn undergone a complete cancerous transformation, and similar masses of cancer push on their growth from them into their efferent vessels."

But returning to the strictly practical side of the question, we have abundant confirmatory evidence on this point furnished for our information by Professor Benedict, of the Breslau University, who has collected the statistics of some few thousand cases treated during a course of fifteen years, and which prove in an unerring manner the truth of our contention. Comment is, therefore, unnecessary in this connection.

One opinion has been expressed concerning the nature of Melanosis, to which I cannot give my countenance. Tradition affirms that grey horses are more liable to the occurrence of the malady than those of any other colour; and we are all aware of

* Lectures on Surgical Pathology. † *British and Foreign Medical Review.*
‡ *Lancet.* § *British Medical Journal.* ‖ Virchow.

the difficulty that is invariably experienced in rooting out these old superstitions. Nevertheless, it must always be done, in and out of season, and wherever we may chance to meet with them. One of the reasons why this superstition has been perpetrated and perpetuated, is that Melanosis is more easily seen in a grey horse than one of a darker colour; while another is that it has led persons to constantly examine those animals of the favoured colour in preference to others; and this has naturally and necessarily led to statistical errors. So far as my own experience extends, I may confidently assert that it is as often to be met with in dark as in grey or light horses and cattle.

In concluding my remarks, I venture to express the hope that, after the evidences I have here adduced, clinical men cannot blind themselves to the fact that the importance of the disease lies only in a study of the physical conditions of it, while all other relations of pathology are suffered to occupy subordinate positions, which by necessity must take a foremost place in any consideration of the subject that is to have a permanent or at all lasting foothold. I, for my part, must decline to accept any compromise in the necessity that is now urged for taking an at once collective view of the subject-matter under consideration, as in it we have to discover the nature of a disease that is of the first magnitude to the public in general and ourselves in particular.

Editorial.

THE DURATION OF PROTECTION AFFORDED BY INOCULATION IN CONTAGIOUS DISEASES.

THOUGH inoculation for the artificial production of certain contagious diseases of man and beast has been practised for more than a century, yet the recent advances in histology and experimental pathology have placed the subject in an entirely new light, and demonstrated that with two or three, if not with all of these maladies, protection may be afforded against them by inducing them in an extremely modified form, through inoculation with their cultivated virus. This has been done with such fatal diseases as Anthrax, Symptomatic Anthrax, Fowl-Cholera, and to a certain extent with Rabies, and it is within the range of possibility that all the other scourges which owe their development and extension to microscopic germs will soon be included in the list. But among the other problems which remain for solution in this matter of protective inoculation, is that of the durability or persistency of the

immunity or protection so afforded, and its being absolute or incomplete.

It has long been well known that certain of these maladies of mankind and animals, rarely, if ever, recur in those which survive their attack, while others (though they are few in number) may again be developed after a variable interval of time. In the case of animals this interval, or even the completeness of protection, is not well ascertained, they being usually short-lived, and with some diseases we are not at all certain whether immunity may be conferred by one attack; indeed, until quite recently we did not know that the three first-named disorders just mentioned came within this category. The Anthrax of cattle and sheep, it has been conclusively demonstrated, can be protected against in its most virulent form, by inoculation with modified virus, *i.e.*, the artificially cultivated germs of the disease; but the question has arisen as to the duration of this protection, as, until laboratory experiments revealed the fact, it was not known that this was a non-recurrent disease. Sufficient time has not yet elapsed since the introduction of this protective inoculation to give a definite answer to the question, but already materials are being collected to afford a satisfactory reply, and perhaps the most important contribution is that afforded by our esteemed colleague, M. Rossignol, of Melun, who has already rendered such good service in this direction, and especially in the experiments undertaken on his own farm, as detailed in this Journal for last March. These experiments, as well as those performed more than a year ago, were so startling and apparently decisive in their results, that in less than three months more than fifty thousand sheep belonging to the farmers of Brie had been submitted to protective inoculation against this scourge—so destructive in this part of France. Last June it was decided to institute a new series of experiments on M. Rossignol's farm, with the view of not only testing the durability of the immunity or protection so conferred, but also ascertaining whether and to what extent the ground in which animals dead of Anthrax were buried was noxious to sheep and cattle grazing upon it. The last portion of the experiment has not yet been reported upon, but the first has, and is very satisfactory. A number of sheep which had been inoculated a year ago, and had subsequently successfully undergone the severe test of inoculation with most active virus, were again submitted to this test, along with others which had not been so protected. The result was, that while all the unprotected sheep perished in a very short time, eighty per cent. of those inoculated were unharmed. Taking all things into consideration, this result must be accepted as not only demonstrating that the immunity conferred holds good for at least a year, but also that it is practically complete with regard to all the animals inoculated; for it must be remembered that the test was a most severe one, and the number of animals comparatively small. In South Africa a horse which has survived an attack of the dreaded "Horse-sickness"—an anthracoid disease—is highly valued, in consequence of its diminished tendency or total insusceptibility to further attacks. Until Rossignol's conclusive experiments, this was the only evidence we possessed as to the non-recurrence of Anthrax.

Another valuable contribution is furnished by Professors Arloing,

Cornevin, and Thomas, of the Lyons Veterinary School, with regard to that form of bovine Anthrax they have designated as "Symptomatic," and which is commonly known in this country as "Black-quarter" (*Carbuncular Erysipelas*). As we have shown from time to time, these investigators have not only demonstrated this disease to be different from ordinary Anthrax, and due to another kind of Bacillus, but they have also proved that protection against it is afforded by the intravenous injection of its virus. Their more recent experiments have been undertaken to settle the point as to the persistence of the effects of this inoculation, and also on the transmission of the conferred immunity from the cow to its progeny.

So long ago as last October, they had published the results of experiments made on thirteen animals which had been inoculated the previous February—experiments which proved that immunity was present eight months after inoculation. In a note recently presented to the Académie des Sciences, they report that immunity yet persisted after eighteen months. A heifer protectively inoculated on November 30, 1880, was inoculated on April 21, 1882, with a certain quantity of virulent pulp inserted into the crural muscles, and which was capable of inducing a fatal termination in an uninoculated animal if it received only one-tenth part of the dose.

This heifer never exhibited the least disturbance in health; while a guinea-pig which was inoculated with the same material was dead in twenty-four hours. Among the animals inoculated in November, 1880, were five heifers which had been put to the bull for the first time in September—sixty-six or sixty-eight days before the intravenous inoculation. They all brought forth calves in due course—one at eight months, but it lived. These five calves were inoculated in from twelve to sixteen days after birth, with very active virus, but no harm was done; the local action was *nil*, the general effects insignificant.

Consequently, it is affirmed that a female of the bovine species which receives this immunity against Anthrax during gestation, transmits it to its immediate progeny—though whether its future progeny are so endowed cannot be stated. Two facts, however, are worthy of being noted. Two heifers protectively inoculated in November, 1880, though put to the bull in the previous September, were not in calf when so inoculated. They were subsequently fecundated—one twenty days, the other three and a half months after inoculation, and by a bull inoculated at the same date, and consequently endowed with immunity. The two calves produced by these heifers resisted the test inoculation as successfully as the other five. In these instances did the calves receive the immunity from their mother or father? Experiments which are now being conducted by these zealous professors will, in all probability, furnish a response to the question.

In the meantime, we may observe that Rossignol had a lamb born from a ewe which was inoculated during pregnancy, and this creature, when six months old, was inoculated with active uncultivated virus, in order to ascertain whether the immunity was transmitted to it. The lamb died.

AN EPILEPTIFORM DISEASE OF DOGS, CAUSED BY AN ACARUS IN THE EARS: AURICULAR ACARIASIS.

IT is now some years (1836) since Professor Hering, of the Stuttgart Veterinary School, discovered in an ulcer in the interior of a dog's ear an acarus, which he thought was a sarcopt. In 1849 it was again discovered by Nicolet, Lucas, and Sallé; by Bendz, of the Copenhagen Veterinary School, in 1859; by Zürn and Schirmer, of Potsdam, in 1874; by Guzzoni, of the Milan Veterinary School in 1877; and Mégnin, Veterinary Surgeon in the French army, found it in 1878 in the ear of the cat and ferret. Bendz, in the *Tidsskrift for Veterinarer* (Vol. VII., p. 1), correctly described and figured it, though the first minute description was given by Zürn in his "Schmarotzer." Bendz designated it the *Symbiotes canis*, and compared it to *Symbiotes bovis;* Zürn named it the *Dermatophagus canis;* while Guzzoni termed it the *Symbiotes ecandatus auris canis*. But after the rules of zoological nomenclature, it has been finally denominated the *Chorioptes ecandatus* by Mégnin. In 1881, in a communication made to the Société de Biologie, of Paris, Mégnin announced that he had discovered the same acarus in the ears of sporting dogs affected with epilepsy. And in the *Archives Vétérinaires* for last March (p. 201) Professor Nocard, of the Alfort Veterinary School, directs attention to it as the cause of Auricular Acariasis, producing an epileptiform disease in hounds.

Seeing the importance of being not only able to diagnose between certain nervous diseases and Rabies, but also of arriving at definite conclusions as to their cause, as well as formulating rules for successful treatment, we think it will interest our readers, and probably benefit canine sufferers, if we allude to the subject in somewhat of detail.

In his communication to the Biological Society, Mégnin states that a few days previously he had been witness to a very extraordinary malady among sporting dogs, which, in the words of their owner, made them look as if consumptive, and caused them to die, after months of suffering. This state of affairs had been going on for several years among the dogs, which were of different breeds, while animals purchased to replace them were attacked in three or four months with the disease, and inevitably succumbed. His kennel-keeper was in despair, for notwithstanding disinfection, lime-washing, and other measures, the mortality did not diminish. Mégnin, being consulted, had a diseased terrier sent to him, in order that he might study the malady; this animal was so seriously affected that the owner was about to have it destroyed.

For eight days Mégnin had the dog under constant observation, and noted the epileptiform seizures, which occurred generally while at exercise, and also remarked the frantic and almost continuous shaking of the ears. Having examined the interior of these, he found that the external auditory canal was covered by a thick layer of cerumen of a sooty colour. This wax being collected and examined microscopically, there was found in it an immense number of acari, which Mégnin recognised as his *Chorioptes ecaudatus*, and which he had already found in other dogs, as well as in cats and ferrets, and had ascertained as having its *habitat* exclusively in the auditory canal of these carnivora. He had also noted that this parasite, when infesting the ear of the cat, by the titillation it excited, produced fits of fury; but until now he was not aware that, in the dog, these fits might simulate Epilepsy. The proof that this parasite was really the cause of the disease in question, was that repeated injections of sulphide of potassium (one to twenty of water) caused the epileptiform seizures to completely disappear in the dog sent to him, and he had no doubt that the same treatment would have been successful with the other dogs in the pack; which treatment was, in fact,

recommended. At the same meeting of the Biological Society, Mégnin exhibited the two ears of a rabbit which had died from an analogous affection, though the parasite which produced the malady was the *Psoroptes longirostris*—a species common to the horse and rabbit, and which, in this instance, had given rise to a veritable Otitis that, from being external, became internal, and ultimately proved fatal. He also showed the foot of a fowl, which was covered with whitish tubercles to such an extent that its diameter was quadrupled and deformed. These tubercles were composed exclusively of stratified layers of epidermis, imbedded in the lower strata of which were myriads of female *Sarcoptes-mutans*, all occupied in laying eggs. The designation of *Sarcoptes-mutans* was given to these acari by Professor Robin, from the fact that when they arrived at the ovigenous age they lost their ambulatory suckers—a change which quite altered their appearance. They do not form galleries, and are not transmissible to the horse.

Professor Nocard remarks that sporting dogs are often decimated by a mysterious, unnamed disease, the most characteristic symptoms of which are the sudden appearance of epileptiform crises, without any premonitory indication. Certain kennels are particularly scourged by it, notwithstanding everything possible in the way of medical treatment or hygienic management, of crossing the breed or importation of new dogs—all is ineffectual, the malady still goes on ravaging the packs, and attacking the majority of the inhabitants of the infected kennels. He knew of a kennel containing usually about fifteen couples, in which, during eight years, more than sixty hounds had died or been destroyed, suffering from the affection.

While the animals are at rest, nothing is seen in the infected hounds to indicate the existence of the malady; the animals are as lively and in as good spirits as any of the non-infected, and when out hunting are quite as ardent until, in about half an hour or an hour's run, all at once they give out a loud cry or scream, which the whip at once recognises as the sign of an attack of the disease. The creature then behaves as if at fault, bounds from side to side with haggard eye and foaming mouth, running against anything that comes in his way, until turning in a circle two or three times, he falls down in a fit of Epilepsy. When the crisis has passed, he gets up looking stupid and fatigued, and if the attack has not been too violent, or the disease not of long standing, he may, after resting a quarter or half an hour, emerge from his apparent apathy, and enter on the chase with as much ardour as before. While affected, however, the aspect of the animal is so terrifying, and the attack so sudden, that people are inclined to destroy him in order to prevent accidents. It does not always happen that an opportunity is afforded for watching the symptoms through all their phases. After emitting the cry of distress, the hound may run away and be absent for a variable period, when he may again join his companions without any one knowing where he had been.

For a long time there is nothing that distinguishes the diseased from the healthy when in the kennel; but, as the malady becomes chronic and the attacks while hunting more frequent, the hounds become more sulky and savage than usual; they retire into a corner of their kennel, keep away from their companions, and do not join in their barking or play. At a more advanced stage, the attacks are so frequent and serious, that scarcely have the animals commenced to run than a seizure takes place; and, if they do not die on the spot, after recovery they refuse to go on. At no time does an attack take place when the creatures are not hunting.

The diseased animals may become completely stupid and quite useless; sometimes they are *quite deaf;* but at no period have they an attack of Epilepsy while in their kennel, so long as they are not excited. Indeed, it would appear that so long as they do not hunt, no matter how active the exercise may be, there is no attack, for one of the huntsmen informed Nocard,

whom he consulted with regard to the disease, that he could not induce it by compelling hounds to follow his carriage from Versailles to Paris, though these animals were quickly seized with it when hunting.

When first consulted, Nocard was much puzzled as to the nature of the affection, and, surmising that it might be caused by intestinal worms, he prescribed anthelmintics, although the owner of the hounds assured him that no worms had ever been found in the intestines of the hounds he had killed, and that old dogs were as frequently affected as young ones. No worms were expelled after the administration of the remedies, and the ravages of the disease were as great as before. At his request a young dog—a basset or "turn-spit"—which was usually attacked before it had hunted a quarter of an hour, was sent to Alfort and kept there for six months, everything relating to it being closely investigated—the blood, fæces, and urine being examined weekly, without result; all the known anthelmintics were successively administered, and it was made to run in a circle for hours together, without presenting any of the phenomena of Epilepsy, so that nothing could be learned as to the cause of the disease. It was at last killed, as it was hoped that an autopsy might furnish a key to the problem; but, though a most thorough search was made, no lesion could be discovered. The disease becoming still more serious in the same kennel, so that the owner was about to give up hunting, Nocard made another close inspection of the pack, but without result; and, having procured the heads of two of the hounds which had just been killed, he examined the brain and medulla, but could discover nothing abnormal. Casually glancing at the ears of both heads, he found in the external auditory canals of each, and quite at the bottom, a somewhat considerable mass of cerumen, of a chocolate colour and the consistency of mastic, lying so close to the tympanum as to push it inwards. A microscopical examination of some of this wax, pressed between two glass slides, revealed the presence of a considerable number of acari in all stages of development—males and females, isolated and in couples, nymphs, eggs, etc., belonging to the genus *Chorioptes* (*Symbiotes* of Delafond), and of the species which Mégnin has named *Chorioptes ecaudatus*.

But it did not settle the question to find these acari in this situation; it was necessary to be assured (1) if their presence was not a mere coincidence; (2) if the *Chorioptes ecaudatus* is not an ordinary inhabitant of this canal in all dogs, or at least in a great number; and (3) if its presence in the neighbourhood of the tympanum was really the cause of the Epileptiform seizures observed. The first question was soon answered, as another sportsman residing at Versailles wrote to M. Bouley, with regard to the nature and causes of a disease like Epilepsy which had affected the greater portion of his hounds. The first attacked had been shot when out hunting, as a measure of precaution; then several others showing the same symptoms, the owner saw that he had a different disease to deal with than Rabies. Next day he brought to Alfort the carcase of a dog that, while out hunting the previous evening, was attacked and died. Nocard found crowds of acari in the wax obtained from the vicinity of the tympanum. Other dogs which had died while hunting, or were destroyed in consequence of the disease, were afterwards forwarded, and in every one the same lesion was noticed, exactly limited to the deeper part of the external auditory hiatus, and without anything to be seen or felt in the external parts of the ear. Nocard therefore came to the conclusion that all the dogs attacked with this Epileptiform disease had these parasites in their ears.

In order to discover whether other dogs were so infested, or whether the parasites were special to epileptic hounds, Nocard examined all the dogs which died or were killed at the Alfort Veterinary School—thirty in all, fifteen of which were killed because of old age or virulent bites, and fifteen

because of different diseases; but in the ears of none of them were any acari found. The presence of the acari was not, therefore, a common occurrence.

The problem, therefore, now was whether they were really the cause of the disease. This could be tested, either by placing some of the infested cerumen in the ears of healthy dogs, or destroy the parasites in the ears of diseased animals, and see whether the epileptiform seizures persisted or ceased. Both plans were tried, and it was found that parasites transferred from the ears of affected animals to those of dogs in perfect health became readily "acclimatised," and in less than a month the small morsel of cerumen had given rise to numerous prosperous colonies of the *Chorioptes*. The dogs so infected also manifested the symptoms just described when they were greatly excited during hunting.

The most marked results were, however, obtained by curative or parasiticide measures. Two dogs were sent to Nocard to deal with as he thought fit. One was quite deaf and the other could scarcely hear, while both had been the victims of numerous attacks of epilepsy—in fact, they could not run for many minutes without having one. After many trials, he adopted the following formula :—Olive oil, 100 parts ; Naphtol, 10 parts ; Sulphuric ether, 30 parts. (To be kept in a well-stoppered bottle.)

Every day this liniment was to be injected into the ear, which was then to be plugged for ten to fifteen minutes with cotton wool, to prevent the evaporation of the ether. Of all the acaricides, remarks Nocard, naphtol has yielded the best results. It is a pyrogenous product, very soluble in oil, and more efficacious, while less irritant and odoriferous, than carbolic acid. To the oily solution he adds the thirty per cent. of ether, in order to facilitate the penetration of the liniment into the oftentimes dense mass of wax which harbours the acari.

This topical remedy yielded such good results in the two, supposed to be incurable, cases (for in a few week they had completely recovered their hearing, and were lively, sociable, etc.), that in February last they were returned to their homes to be employed in hunting, and they were found to be entirely free from the former alarming symptoms when so engaged day after day, for hours together.

All the dogs in the kennel were then similarly treated, and the malady has disappeared.

With regard to the way in which these acari produce the epileptiform symptoms, it was at first suspected that they gave rise to serious alterations in the internal ear—to a kind of acariasis like that met with in the ears of rabbits affected with ear scabies ; but there was no lesion of this kind found in the dogs. It is therefore exceedingly probable that they give rise to a reflex kind of epilepsy, allied to the spinal epilepsy of Brown-Sequard, or the nervous disorder known in man as "Menier's disease." And it may be that the elevation of temperature which takes place while the dogs are actively hunting, increases the movements of the acari, and consequently augments the irritation set up by them.

If this explanation be accepted, it demonstrates the influence that irritation or disease in the ear may exercise on the system generally, and the rapidity with which the most alarming symptoms occasioned thereby may disappear when the irritation or disease is subdued by appropriate remedies.

Experimentation and clinical observation have shown that irritation or compression of the nerves of the semi-circular canals of the ear will occasion disturbed equilibrium, and fits of derangement, such as fury or sullenness, reflex acts of crying or screaming, etc.

HORSE-POX.

NOTWITHSTANDING all that has been said, written, and demonstrated as to the existence of a veritable Horse-pox or Variola, there are still some persons who are sceptical, and who are inclined to assert that what has been taken for this disease is another non-variolous malady. In "Veterinary Sanitary Science and Police," in our pamphlet on "Human and Animal Variolæ," in this Journal and elsewhere, we have offered abundant evidence, derived from our own experience and that of others, to prove that the affection does exist, and that it has been witnessed not only in this country and on the Continent of Europe, but that it sometimes appears in an epizöotic form in America. In corroboration of all that has been already stated as to the existence of Horse-pox, and its close relationship to, if not absolute identity with, Vaccina or Cow-pox, we now have an interesting note on it from the pen of Professor Peuch, of the Toulouse Veterinary School (*Revue Vétérinaire*, July, 1882), showing that it is present in North Africa. It appears that, in October last, the professor was in Algeria, and while at Boufarik, a communal veterinary surgeon, M. Renaud, showed him a fine example of the vaccinogenous disease in a Barb stallion, aged four and a-half years, belonging to one of the principal colonists of the Mitidja. The symptoms were as follows: Around the nostrils numerous flattened, discoid, umbilicated pustules, the size of a lentil, some of which were in process of dessication, and others from which, by slight pressure, a limpid humour of an amber colour could be forced. Toward the inferior commissure of the left nostril was noted a superficial ulceration, the size of a silver five-franc piece, with festooned border, and covered in places with crystalline, yellow, and transparent crusts; elsewhere the derm had a bright red tint and a finely areolated aspect. A yellow, serous fluid was discharged from the nostril. The pituitary membrane was highly injected, especially on the side from which the discharge came, and where could be seen on the nasal septum vesico-pustules the size of a small pea, round in shape, and white or yellowish in colour. In the mouth, and particularly within the lips and on the lateral surfaces of the tongue, there were a multitude of small vesicles of a pearly aspect, and the size of small peas; some of these were isolated and intact, but the majority were confluent and as if eroded in their centre. A viscid saliva flowed abundantly from the mouth while it was being explored. The subglossal glands, particularly those of the left side, were swollen, hot, and painful on manipulation. On the sides of the neck, shoulders, sides of the body, the lower parts of the limbs, and hollow of the pasterns, the hair was erect in places and formed small tufts. In passing the hand over these regions, small lenticular nodules were felt—these were the Horse-pox pustules, some dried up, others secreting. The horse appeared dull and prostrate, and was slightly feverish; the appetite was diminished.

From all these appearances, there was no hesitation in pronouncing the case one of Horse-pox, and it was decided to collect some of the fluid exuding from the pustules and keep it between plates of glass. This was done by M. Renaud, and it was arranged that he was to inoculate some animals of the bovine species with the fluid. In a letter from him, dated November 4th, Peuch was informed that four calves, from five to ten months old, had been inoculated, and that Cow-pox was the result. He also stated that three horses which had eaten out of the manger the other horse had been fed from, were attacked at that date with well-marked Horse-pox—showing that transmission of the disease may take place in this way. Peuch, who had in the meantime returned to France, wrote for some Horse-pox virus, and also for some of the Cow-pox lymph which he had produced; this was received on January 15th, and on the same day, along with Professor Bidaud,

of the Toulouse Veterinary School, he inoculated at the experimental farm of the school: 1, An Ayrshire cow in advanced pregnancy, about nine years old, with the Horse-pox lymph, previously mixed with a drop of tepid water —as it was dry; about twenty punctures were made in and around the vulva and in the perineal region; 2, Another cow equally advanced in pregnancy, seven years old, with the Cow-pox lymph derived from the Horse-pox, and operated upon in the same way as the other.

On January 19th—the fifth day after inoculation—there was no trace of inflammation at the punctures, and with the exception of one or two of these, which were slightly papulous, all seemed to be healed up, so that Peuch thought his experiment would prove sterile. He was, however, agreeably surprised at finding on the 24th of that month, while on his weekly visit to the farm with the students, that the majority of the punctures he had made ten days previously, and which were invisible on the 19th, were now transformed into fine vaccinal pustules, surrounded by a rose-coloured areola. On the 25th the two cows were brought to the veterinary school, where two fine Dutch heifers, one seven, the other fourteen months old, were vaccinated from them. In five days each puncture had become a pustule, and the Doctors Armieux, Jougla, Caubet, and Parant, who were invited to inspect these heifers, recognised the true nature of the vaccinal eruption presented on the perineum and teats.

From this eruption were inoculated calves and heifers up to the end of last May, and the vaccine lymph obtained from them has been employed to vaccinate about fifteen hundred persons.

REMARKS ON A NEMATOID HÆMATOZOON DISCOVERED BY DR. GRIFFITH EVANS, M.R.C.V.S., IN A CAMEL.

BY SURGEON-MAJOR T. R. LEWIS, M.B.*

Dr. Lewis observed that the occasional presence of nematoid organisms in the blood of various animals had long been ascertained, and that it would be known to some of the members that, about ten years ago, he had drawn attention to the fact that in India a somewhat similar condition was observable in man, and that this condition was associated with certain forms of grave disease. Since this period the literature of the subject had very rapidly increased, and numerous confirmatory observations had been made in various parts of the world. Our knowledge of the hæmatozoa of lower animals had also been very greatly extended during the same period, and of recent observations of this kind the most important which he knew of was one which had been made by Dr. Griffith Evans, the present head of the Veterinary Department in Madras, who, whilst making a *post-mortem* examination of a camel at Dera Ismail Khan, in October, 1880, found that the blood of the animal swarmed with the brood† of a nematoid parasite resembling the hæmatozoon found in man. Dr. Evans found, furthur, that the parental form existed in the lungs, the pulmonary arteries of which were plugged in by tangled masses of the thread-like parasites. They were also found in the mesentery. A comparison of these hæmatozoa with those found in man shows that whereas the embryonal forms of both kinds are indistinguishable under the microscope, nevertheless the mature form as met with in the camel differs, both as to size and structure, from the only male and female specimen of the mature form met with in man

* From the Proceedings, Asiatic Society of Bengal, for March, 1882.

† This was found before the camel was killed. *Vide* my report on *Surra*, paragraph 15 (camel No. $\frac{3}{72}$), when I also stated that I found one specimen in a horse also. This is not the parasite of Surra.—*G.E.*

which has hitherto been obtained in India, and so far as the speaker was aware this hæmatozoon of the camel differs from any hitherto described parasite. Should further enquiry confirm the supposition that the parasite is new to science, he proposed that it should be called *Filaria Evansi.*

Dr. Lewis submitted mature specimens of the *Filaria Evansi* and of the *Filaria sanguinis-hominis* to the meeting, as well as samples of the microscopic embryos of both kinds: and furnished the following preliminary description of the mature hæmatozoon of the camel.

FILARIA EVANSI, sp. nov.

The *male* measures from 3 in. to 4½ in. in length, and from $\frac{1}{30}$ in. to $\frac{1}{45}$ in. transversely at the widest part. At the oral end the width is about $\frac{1}{250}$ in. and about one-third of an inch lower down the width equals $\frac{1}{90}$ in. The tail tapers to a blunt point, and is curled into two or three coils. There are two spicules; the longer measures $\frac{1}{15}$ in., and the shorter $\frac{1}{150}$ in. The cloaca is situated at $\frac{1}{222}$ in. from the end of the tail. The bursa is small, and is characterised by four pairs of pre-anal and two pairs of post-anal papillæ, with a fifth post-anal papilla close to the tip of the tail. The mouth does not manifest any well-marked lips. The œsophagus is $\frac{1}{4}$ in. long by about $\frac{1}{250}$ in. wide; and the cæcal commencement of the sperm tube may, in well-prepared specimens, be detected lying near the junction of the œsophagus and the intestine. The sperm tube measures about $\frac{1}{400}$ in. transversely, and the intestinal canal about $\frac{1}{170}$ in.—both measurements being made towards the middle of the body of the worm.

The *female* is, speaking generally, about double the size of the male. It is from 6 in. to 8 in. long, and from $\frac{1}{80}$ in. to $\frac{1}{32}$ in. across, at the widest part. The mouth is simple and somewhat pointed, the width of the parasite at this part averaging $\frac{1}{225}$ in. The tail is blunt—terminating in a slightly clubbed or funnel-shaped enlargement; its width at the extreme end averages $\frac{1}{160}$ in., but a little higher up its diameter is somewhat less—$\frac{1}{250}$ in. The œsophagus averages 3 in. in length, and $\frac{1}{150}$ in. in width, and the intestine about $\frac{1}{170}$ in. The anus terminates at a spot about $\frac{1}{100}$ in. from the caudal end. The genital orifice is about $\frac{1}{40}$ in. from the mouth. For about a quarter of an inch from the orifice the genital tube presents nearly the same diameter, viz., about $\frac{1}{250}$ in., and then it rapidly widens to $\frac{1}{100}$ in., and subdivides into two utero-ovarian tubules, each measuring $\frac{1}{150}$ in. transversely. The tubules are generally packed with embryos averaging $\frac{1}{125}$ in. in length by $\frac{1}{1500}$ in. in width. Lower down, ova, in various stages of differentiation, and embryos are mixed together.

The specimens examined had been for a short time in spirit; they were of a yellowish-white appearance and female specimens more numerous than males. There was no marked difference as to firmness of texture between them. A fuller description of the minute anatomy of the parasites has been prepared, and is nearly ready for publication.

GOITRE IN SHEEP.

THERE is no disease with which sheep are afflicted more to be dreaded than this, none more erratic in its attacks, and none where we know so little of the causes that induce it. On this latter point we indeed have a vast amount of speculative theory. Breeders who have had very little experience with the disease are generally quite ready to name causes that to their minds seem conclusive; but those who have had the most experience, and from observation and investigation of its causes and effects are best qualified to judge, have generally come to the conclusion that they know as little

about the inducing causes as our family physicians know about those that induce scarlet fever. While the two diseases are entirely unlike, both in their nature and their effects upon the system, there are many circumstances attending them that are similar. Both diseases assume different forms, both are eccentric in their attacks and effects, and generally it can be judged only imperfectly what the final result will be—whether the patient will fully recover and be entirely rid of the disease, or any effects from it, or, if not immediately fatal, whether the after effects may not so weaken and poison the system as to undermine the constitution, and eventually destroy the value and usefulness of the patient.

Like scarlet fever, goitre is in most cases confined to the young; except in rare cases adults are not afflicted with these diseases. Generally, in sheep, the few cases of goitre found in animals older than lambs probably had their start, or inception, when the lamb was dropped. There is reason to believe that in this respect the disease afflicts the human family differently, though some medical authorities set it down as a disease that afflicts young females more than others. It is singular that in sheep the animal is afflicted with the disease at its birth. It may have been so very slightly developed as to have escaped notice, or have at first produced no visible deleterious effects upon the system; but we think in all such cases investigation will prove that there were more or less cases in the flock at the time the lamb was dropped, and the after appearance of the disease was only the development of the seeds of it that had escaped notice at the time of birth.

It may be confined to one locality or barn on a farm, and not exist in another barn on the same farm, or in the immediate vicinity.

The disease that attacks sheep, and is generally called goitre, in some cases causes a swelling of the thyroid glands, that finally and quite rapidly disappears, and in others suddenly enlarges and suffocates the lamb soon after being dropped. In some few cases, after a time—it may be years—it develops into real goitre.

Another phase of the disease causes what are called soft lambs, resulting from defective nutrition *in utero*, that sometimes have small swellings on the glands of the neck, sometimes large, and sometimes have scarcely any that are perceptible. The coat is usually a long, soft, silky hair on the sides, and partially over the other parts of the body, very different from the usually woolly coast or the jany hair that is often the coat of Merino lambs when dropped. The abdomen is usually, in this phase of the disease, much swollen, showing a dropsical tendency. This form of the disease is not common when there are but few cases in a flock, but very common where a large proportion of the flock drop goitred lambs. It is in such cases as these that there seems great uncertainty what the final effect of the disease will be. We have known cases where what were called soft lambs were so weak when dropped, that at first it seemed impossible for them to live; they were unable to stand for a week, but finally recovered. In other instances, those that were able to stand at first gradually grew weaker, and finally died, after a period of from one to two weeks; others would, after appearing to grow better for a few days—sometimes a few weeks—be afflicted with what some breeders call the rickets, stagger about, after a while become so badly affected as to be unable to stand; at which time the discouraged shepherd will generally end the sufferings of the patient by cutting its throat. We noticed such a case last year—a lamb that, although soft at first, not badly so, seemed to recover, and grew strong and quite fleshy, but in three or four weeks became paralyzed, and although otherwise apparently healthy, could not stand. It would roll and wallow about, looking up piteously pleading for help and food, which to the last it took with a keen appetite and hearty relish. Some cases have been successfully treated by inserting a rowel on

the top of the shoulders, and others, where the enlargements on the glands were larger and strangulation therefrom threatened, by removing one of the tumours by a surgical operation. Large, hard tumours have been removed from older sheep, but they frequently do not survive long. In the case of a ram four years old, from the neck of which was removed a goitre weighing four pounds, the feeder for which from the jugular vein was nearly or quite as large as the vein itself, at first, the animal lost considerable blood, but had apparently a good deal of strength, and ate with a tolerable appetite ; however, at the end of twenty-four hours he began to droop, and died the second day after the operation was performed. It is doubtful whether in this case the sloughing off of the ligaments binding up the artery would not have been followed by immediate death from bleeding from the jugular vein, had not the immediate shock to the system proved too much for the vital forces of the patient. The tumour itself was hard, with small veins or arteries running all through it, encased with muscle of a fungoid nature, with deposits of lime throughout the whole bunch. This latter feature has led to the supposition that drinking lime or hard water might cause ewes to have lambs with goitre ; but since cases occur where flocks are afflicted with goitre when the ewes have no other water to drink during the season of pregnancy but soft, rain water, caught in cisterns from the roofs, these facts seem to overturn that theory as effectually as other facts do other theories in regard to the cause of this disease.

It is very common to name high feed and want of exercise for the ewes during pregnancy as probable causes, but there are many instances where these could not be given.

We recall an instance where, in the early winter of 1880-81, after the ewes of a flock had been served, they were sold, the younger and fleshier portion to one purchaser, who afterwards kept them very high, and very closely confined, until they dropped their lambs. These came very strong and healthy. The thinner and older ewes were sold to another purchaser who gave them moderately good keeping and exercise. Among these were several cases of goitre. The same season, another flock, after they had been served, were divided, a part being taken away from home and wintered with another small flock. Both portions were kept in moderate condition, with reasonable exercise. About a week before the lambing time, those away from home were brought back, and kept with the others, until they had all lambed. The lambs from both portions were badly affected with the disease, there being very few perfectly healthy ones among them. Some of the worst and fatal cases were among the ewes that first dropped their lambs, and of the portion of the flock wintered away from home, while the flock where they were wintered had no diseased lambs. In addition to the exercise of two large yards, and a very large, roomy, and airy shed, the portion of the flock taken away were driven over five miles, only about a week before they commenced to drop their lambs. This same flock of sheep, during the past winter kept together, fed grain much more liberally, with about the same amount of exercise as the winter before, certainly no more, have come out in much higher condition, and have dropped a very healthy lot of lambs.

It is the opinion of some that the stock from certain rams are more liable to have goitre than that from others. It is a curious fact, that in the case of the flocked named, a large portion of the ewes were served away from home, no less than nine different stock rams having been used the fall of 1880. There was no appreciable difference in stock from the different lambs in their being affected by the disease. It is true the lambs sired by some of the rams were affected, and those from only two of them were exempt ; but investigation, where these rams had sired other lambs, failed to show that

the stock from one was less or more liable to be affected by the disease than that from the others.

We knew of a very promising young ram being sold for 40 dols. that had large goitre tumours on his neck ; the same ram, at the time, could have been sold readily for 1,000 dols. if he had been sound and healthy. He was used extensively, and proved an excellent stock ram ; no complaint was ever heard that his get were more affected with the disease than the stock from any other ram ; it was even claimed his get were more free from it than that of other rams.

This is a congenital defect, and although, as stated above, sheep that have been affected with goitre have been used for breeding purposes without apparent bad results, still we should advise, that in order to guard against any possibility of perpetuating disease, such stock should not be put in the breeding flock.

In regard to remedies, in certain phases of the disease, some may be used successfully, where there are small or moderate swellings on the thyroid glands ; tincture of iodine, reduced somewhat by about equal parts of hog's lard, or some penetrating oil, and spirits of camphor, applied directly over the tumours, and rubbed in until fully absorbed, will sometimes scatter them. In the case of what are called soft lambs, little can be done except to nurse the patient carefully and persistently until it dies or improves. Unless a paralyzed condition of the limbs sets in, many of them may thus be saved.

Where there is a tendency to drop the head, as is often the case where this disease prevails in a flock, a small box, so constructed that the lamb cannot get his head down when lying, will serve in a majority of such cases.

As a preventive, it is recommended to mix a moderate quantity of powdered nitre with the salt fed to the ewes for a few weeks before lambing. As nitre acts upon the blood quite directly, it is an excellent preventive ; but the great difficulty in determining the value of any preventive must be negative, unless some cases can be found where it has failed ; for where the lambs come healthy, after using it as a preventive, there is nothing to prove they would not have been equally as healthy if it had not been used. One breeder claimed to us he had used this remedy for some years, and had had no goitered lambs since he had commenced using it ; but there are many breeders who have uniformly had healthy lambs who have never used it.

In the human family the disease is more prevalent in damp, low, and malarious situations, and it is probable that it will prevail more extensively among sheep kept in such localities. It is a self-evident fact that dry, airy quarters, with plenty of exercise, are best and most healthy for sheep, and tend to give them that constitutional vigour that best resists the action or attacks of any disease. Breeding ewes should, if possible, have such quarters ; if they do, these may be warm, and the sheep may be liberally fed, without any fear that the warm quarters or the extra condition of the ewes, will invite any attack of the goitre.—*National Live Stock Journal.*

PULMONARY GLANDER NODULES.

WHAT have often been designated "Miliary Tubercles," and alluded to as showing the existence of Phthisis in the horse, have for some time been carefully examined by Continental veterinary authorities (*Veterinary Sanitary Science and Police*), with the result that the formations have been more especially identified as pathognomonic of Glanders. Csokor has recently concluded, from extensive observation, that there are two kinds of nodules which veterinary surgeons often mistake for glander tubercles. Of these there are small round tumours, variable in size, composed of

yellowish-white, or grey matter, fibrino-cellular in structure, contained in a dark red capsule, and in which the normal elements of the middle coat of the blood-vessels can be perceived by the aid of the microscope; these nodules are, in reality, vascular emboli. The other nodules are white, hard, compact, homogeneous, and are oniy the others in a more advanced stage of embolism. The glander tubercles are readily distinguished from these nodules by their well-known histological structure, the principal feature in which consists in the rapid destruction of the lymphoid elements in the centre of the tubercle.

With regard to the embolic nodules, they may pass through the following phases: 1, Peripheral hyperæmia, sometimes running on to hæmorrhage, followed by inflammation, with diapedesis of the white globules and infiltration of the lymphoid elements of the fibrino-cellular mass included in the vessel; 2, Development of neo-capillaries in the walls of the blood-vessel and in the substance of the embol, the disintegration of which is gradually effected, as in all cases of organised thrombosis; 3, Disappearance of the hyperæmic zone, which is replaced by embryonic fibrous tissue, constituting a small, hard, solid mass, white in colour and homogeneous in structure.

Uspenski, in his researches into the structure of the glander nodules, arrives at the following conclusions: 1, Their formation in the lungs of the horse and mankind always commences by inflammatory alterations; 2, These alterations are usually those of catarrhal or fibrinous Pneumonia, in patches; 3, The appearance of these detached patches of Pneumonia is due to the irritation of the pulmonary parenchyma by the Glander contagium—that is, by *Bacilli*; 4, The Inflammatory process always passes on to destruction of the involved tissue, the inflammatory products being constantly invaded by fatty and caseous degeneration; 5, The pulmonary epithelium takes an active part in this neoplasmic process, in giving origin, by proliferation, to the large epitheloid cells of tubercle, to pus globules, and, lastly, to the embryonic fibrous tissue at the periphery.—*Virchow's Jahresbericht.*

THE FELLOWSHIP DEGREE.

On July 18th, an examination was held at the Royal College of Veterinary Surgeons, of candidates for the degree of Fellow, Professor Duguid, the Dean of the College of Preceptors, and Messrs. Collins and Fleming, being the examiners. The following gentlemen successfully underwent the examination, and became Fellows: Messrs. Oliver, Cooper, and Rayment, Army Veterinary Department; and Messrs. Sperring and Hedley, Veterinary Department, Privy Council, Dublin. The questions in the written portion of the examination were as follows:—

Pathology.—1. Give the pathology of Fever, and describe the different kinds, with reference to the characters which distinguish them.

2. Describe the following Neoplasmata: (*a*) Fibromata; (*b*) Myxomata (*c*) Melanomata; (*d*) Carcinomata.

3. Give the pathology of Diphtheritis, and briefly describe its manifestations in animals.

Epizoötiology.—1. Describe the various forms Influenza assumes in the horse, and give your opinion as to the influence or influences upon which its geographical extension depends.

2. Enumerate the different species of domestic animals to which Anthrax may be transmitted, their degrees of susceptibility, and the various way in which natural infection may take place.

Surgery.—1. Describe the operation of *Lithotomy* in the horse—(*a*) mode

of securing the patient, (*b*) details of the operation, (*c*) instruments employed.

2. Describe the operation of *Neurotomy*, both high and low.

3. Describe the best methods of administering *Anæsthetics* to the (*a*) horse, (*b*) cattle, (*c*) dog.

Sanitary Science.—1. State the various causes which produce *Damp Stables*, and how they are to be remedied.

2. Explain the action on the skin by the use of the horse-brush, and name the diseases which usually arise from defective grooming.

Dietetics.—1. Describe the various changes, chemical and other, which *Hay* usually undergoes from the time when, as grass, it is first cut until it becomes what is known as old hay.

2. How should young horses be treated when first stabled as regards (*a*) stables, (*b*) diet, (*c*) exercise?

Anatomy.—1. Describe the structure of the choroid coat of the Eye, including the iris, and state the differences observed in the pupillary opening in the different domestic animals.

2. Describe the characters of the mucous membrane of the large Intestine, and state how this portion of the alimentary canal is arranged in the horse, ox, sheep, and pig.

Physiology.—1. What is Urea? Where is it formed? State the conditions which may increase or diminish its quantity in the urine.

2. Describe the structure and functions of a Lymphatic Gland. State what relation the great serous cavities bear to the lymphatic system.

Therapeutics.—Describe the physiological and therapeutic actions of Aconite, Belladonna, and Nux vomica. State under what conditions their administration is indicated.

NEW MEMBERS OF THE PROFESSION.

AT a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held on the 5th July, the following students from the Royal Veterinary College were admitted members of the profession :—

Mr. J. J. Dawtrey	Chichester.
„ A. E. Michell	St. Austell, Cornwall.
„ *C. J. Humphrey	Kentish Town, N.W.
„ Thos. Down	St. Heliers, Jersey.
„ H. J. Skinner	Narborough, Leicestershire.
„ Tom Bolton	Camden Road, N.W.
„ J. H. Brown	Wanstead, Essex.

The following students passed their Second Examination on the 3rd and 4th July :—

Mr. B. Checkley.	Mr. T. G. Hewitt.
„ J. T. Twiss.	„ S. J. Blanchard.
„ H. T. Pease.	„ *Thos. Williams.
„ W. R. Ball.	„ Chas. Morgan.
„ *W. F. Shaw.	„ G. W. Beck.
Mr. W. Langdon.	

The following passed their First Examination on the 6th, 7th, and 8th July :—

Mr. *A. C. Piesse.	Mr. *E. R. Butler.
„ *G. H. Evans.	„ W. H. Taylor.
„ *Walter Drewitt.	„ J. E. Rickards.
„ *A. C. French.	„ John Brett.

Mr. P. G. Luff.	Mr. *H. L. Pemberton.
„ G. H. Golding.	„ *E. Taylor.
„ J. F. Farrington.	„ *W. Willis.
„ W. B. Whigham.	„ E. J. Catmull.
„ *John Hammond.	„ Alex. McRaith.
„ *A. V. Field.	„ H. A. Higgs.

* Mr. F. C. Mahon.

* Marked thus passed with "Great Credit."

Army Veterinary Department.

Gazette, July 11th, 1882.

Veterinary-Surgeon, First Class, Andrew G. Ross, retires on half-pay.

Obituary.

THE following deaths have been reported: John Fahey, M.R.C.V.S., Londonderry, who graduated in 1847; and W. G. Easton, M.R.C.V.S., Woodford, a graduate of 1863.

The death of J. H. Farrow, M.R.C.V.S., London, who graduated in 1861, is likewise reported.

Mr. Samuel Amis, M.R.C.V.S., died at his residence, Great Yarmouth, on May 21st, aged seventy-one years; he graduated in 1833. The first fifteen years of his professional career were spent at Wisbech, Cambridgeshire, where he had a good practice. He then devoted himself to agricultural pursuits at West Walton, and for the last few years led a retired life at Great Yarmouth.

Proceedings of Veterinary Medical Societies, &c.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE meeting of this Society was held on the 8th of June, at 10, Red Lion Square. The President, Mr. J. Woodger, jun., occupied the chair. The other Fellows present were Messrs. H. K. Shaw, G. Fleming, J. Moore, W. Hunting, A. Broad, C. Sheather, H. J. Hancock, G. Gray, and A. B. Daniel. A discussion which was to have taken place on the subject of Rabies was adjourned on account of the interest taken by the meeting in the pathological specimens exhibited.

Mr. HUNTING showed a small stone and a cork which he had taken from the stomachs of two dogs. The first was a small black-and-tan bitch, which was suddenly seized with vomiting and convulsions. Fits always followed the administration of solid food, Mr. Hunting therefore looked upon the stomach as the seat of the mischief; he ordered Brand's Essence of Beef to be the only nutriment allowed, and gave hydrocyanic acid, and occasionally trisnitrate of bismuth; improvement occurred, but as soon as meat or even ordinary beef-tea with sediment was given it was vomited. The dog died in a few days, and the cork was found firmly plugged in the pyloric orifice, the adjacent mucous membrane being much thickened and inflamed. Mr. Hunting laid stress on the point of dietetic value, that the beef-tea made from Brand's Essence was the only form of nourishment retained by the stomach, its perfect fluidity allowed it to be absorbed by the gastric vessels.

The second dog had suffered more or less for six months, it became very thin, and occasionally showed much distress, heaving at the flanks, and suf-

fering from vomiting, fits, and convulsions. The stone found in the stomach was too large to pass into the intestines, and the pyloric orifice was rendered small by an excessive thickening of the coats of the duodenum at this part. Mr. Hunting suggested that it is only when a foreign body attempts to pass the pylorus that convulsions occur, or that irritation of stomach which induces them.

Mr. WOODGER, alluding to several cases of this kind, mentioned that of a mastiff in which he found a large stone in the stomach, but from other evidence he had reason to believe death resulted from carbolic acid poisoning.

Mr. HUNTING, on eliciting that no paralytic symptoms were shown in this case, observed that he had always found Paralysis follow poisoning by carbolic acid.

Mr. BROAD said he had found thickening and inflammation of the first inch or two of the duodenum to be an extremely common disorder in dogs. He thought Mr. Hunting's idea was a sound one regarding convulsions, as the region of the pylorus was endowed with great sensitiveness.

Mr. MOORE instanced several cases of stone swallowing in dogs, also of obstruction of bowels from this cause.

Mr. WOODGER exhibited a portion of a horse's brain, showing a large cystic tumour upon the posterior part of the cerebrum. The horse was a chestnut Clydesdale, it began to bear to the near side when at work, and this tendency became so confirmed that he could not be used. When put into the loose box he continued to walk round, bearing his head against the wall, never caring to seek food, though eating as usual when led to the manger. Mr. Woodger diagnosed tumour of the brain, expecting to find it, as he usually did, upon the plexus choroides, but in this instance it was above the cerebrum over the fourth ventricle. He said he thought the symptoms of abscess of the brain clearly distinguished from those of tumour, from the fact that in the former case coma sets in in the course of twenty-four or forty-eight hours.

Mr. SHEATHER said he was reminded of a peculiar case somewhat similar to the above. The horse he referred to suffered from an unusual form of skin disease, this proved very intractable, and he was turned out to grass ; while these strange symptoms were manifested, he was generally found at the end of the field, which was much elevated ; here he would walk along, carrying his head raised high over the hedge, and then back again in the same manner ; about every fifth distance he fell, and rolled down the slope till his progress was stopped by a brook at the bottom ; from this brook he had to struggle, or be assisted, ten or twelve times daily. He was taken to the Veterinary College ; Professor Axe noticed dilation of one pupil, also a loud noise from obstruction in his breathing.

Post-mortem examination revealed a large thick-walled cyst upon the epiglottis, also three or four cysts upon the brain, they each contained serum with crystalline masses of cholesterine.

Mr. FLEMING considered the tumour under notice was fibrous in character ; he said the majority of cerebral morbid growths contained cholesterine. These forms of brain disease were, he remarked, not uncommon, especially in old horses. In most cases the veterinary surgeon was justified in advising slaughter.

He referred to the case of a horse in which he found a large tumour in each lateral ventricle ; there was no tendency to turn to either side, but much disinclination to move.

Mr. SHEATHER mentioned an instance of double tumour of the ventricles, one of the growths being as large as a hen's egg ; the horse had no inclination to bear on one side, but would occasionally fall and struggle spasmodically, while for several hours together nothing would be suspected to be the matter with him.

Mr. WOODGER next introduced to the notice of the meeting portions of the liver and intestines as well as the hearts of some fowls he had examined.

The number kept was about a hundred and twenty, and they had a run of an acre and a half, they were highly bred, valuable birds. Within the last three months many had fallen ill, being first observed to put up their feathers and froth at the mouth ; a few of them died, and perhaps not more than eight now remained unaffected. Some were examined *post-mortem*, but the appearances found were most diverse ; in one the liver and intestines were studded with tuberculous-like deposit, in others the inner surfaces of the pericardial sac were coated with a powdery deposit ; in one case a dense white tumour was attached to the mesentery, in another a morbid growth covered the tongue and larynx, while in one fowl nothing abnormal was detected beyond a little viscid mucus in the mouth. Some of the birds were killed for the purpose of examination.

Mr. FLEMING recommended that the morbid deposits should be microscopically examined. Fowls were, he said, peculiarly liable to attacks of disease of parasitic nature, which caused great damage. Guinea pigs might be inoculated to test whether the disease was Tuberculosis. The healthy fowls should be removed to fresh ground, as prevention was a point to which great attention should be paid. One diseased fowl introduced among the healthy might contaminate the whole. On the continent much more attention was given to the disorders of fowls than in this country, and he recommended to the profession a book on the subject which had lately been published in Germany,

Mr. HANCOCK thought that examination of the nodules upon the liver would prove the malady to be parasitic, as they did not resemble tuberculous formation.

Mr. WOODGER said it was now too late to attempt separation, the owner had wrongly been removing only the diseased ones, leaving the remainder upon the old ground.

Other Fellows further sustained discussion on the various points of the case.

A. BROAD, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE forty-sixth meeting of the above Association was held on the 9th of June, at the North Stafford Hotel, Stoke-on-Trent.

Members present—Capt. Russell (President), F. Blakeway (Treasurer), H. Olver (Vice-President), R. C. Trigger (Secretary), T. Greaves, H. Blunt, E. Hodgkinson, W. Higgins, H. A. Toulson, J. Coe, C. Ison, A. Hodgkins, A. Olver.

Telegrams and letters of apology for absence were received from G. Fleming, E. Faulkner, T. Hopkin, P. Taylor, R. H. Cartwright, Thos. Taylor, A. Green, W. A. Taylor, R. H. Perrins, H. Stanley, E. Stanley, H. D. Pritchard, F. W. Wragg, G. Bland.

The minutes of the previous meeting held at Derby having been read and confirmed,

Letters from Mr. E. Stanley and Mr. Martin, referring to the proposed testimonial to Mr. Fleming, were then read, when Mr. HIGGINS moved that a subscription be opened among members of the Association in aid of the testimonial fund, which was seconded by Mr. BLUNT, and agreed to. A list was started, and most of those present put down their names.

The SECRETARY announced the death of Mr. John Carless, of Stafford, an honorary associate, and a vote of condolence with the family of the deceased gentleman, moved by Mr. OLVER, and seconded by Mr. GREAVES, was unanimously adopted.

On the proposal of Mr. TRIGGER, the meeting unanimously elected Mr. Blakeway to succeed Mr. Carless, as life member representing the Association of the National Benevolent and Mutual Defence Society.

Mr. E. Cox, of the Army Veterinary Department, Aldershot, and Mr. J. Darby, of Rugby, were duly elected members of the Association.

A letter from Mr. G. A. Banham, in reference to the proposed formation of the British National Veterinary Association, was read. It suggested that two members of the Midland Society should be appointed on the committee for organising the scheme.

Mr. OLVER moved, and Mr. WIGGINS seconded, the selection of Capt. Russell and Mr. Stanley as representatives of the Midland Association, which was cordially carried.

The PRESIDENT then delivered his inaugural address. He said several events had happened during the past year of vital importance to their body, prominent amongst which was the passing of the Bill which recognised them as a profession. Several efforts had been previously made to obtain from the State that recognition which was their indisputable right, but they had been unsuccessful. The great aim of the Act of 1881 was to suppress quackery in the treatment of animal diseases, which was so prevalent in this country. When they considered that there were several thousand unqualified practitioners now in business, they could only wonder that they had remained quiet and allowed such a state of things to continue so long. There might be a few members of the profession who were not satisfied with the Act as it stood, but they must admit that the thin end of the wedge had been inserted, and it remained for them to prove that they were worthy of the confidence reposed in them, and of still further recognition, looking forward to the time when they should reach the height of their ambition, and find themselves admitted to the position in society which was their due. The existence of so many unqualified practitioners bearing the title of veterinary surgeon was due to the apathy of the profession itself, which, by not upholding the rights conferred upon it by the charter of 1844, had lost its power to dispute the right to the title, and any person could with impunity assume the title, and practise veterinary surgery without let or hindrance. Let them take care that in future any person found using the title, or practising without authority and qualification, should be made to appear in his proper colours. It would at the same time have been a great hardship upon those who were earning an honest living as practitioners, if the Act of 1881 had given them no loophole; and it had therefore provided that those who had been in practice five years before the passing of the Act, on their proving themselves respectable members of society, of good morals, and sufficiently acquainted with the rudiments of the treatment of diseases to enable them to carry on their avocation, might be registered as "existing practitioners." A glance at the new register would show the position they would occupy, and it would be the fault of the profession if they presumed on their position. Not one would be registered until the council were quite satisfied of their eligibility; their names would be advertised in the local papers, and they (members of the profession) must prevent any improper candidate from obtaining the coveted certificate. He believed that upwards of 1,500 unqualified practitioners had already applied for registration, and probably another thousand would be added to that number. Not more than two-thirds of the whole would probably be found eligible, and the final decision must not be expected to be made known until the end of 1883, after which date quackery as regarded the veterinary profession would die out. He congratulated them on the passing of the Act, and was pleased that the labours of George Fleming in reference to it were appreciated. There appeared to be a unanimous feeling in favour of expressing their sense of his services, and on the proposition of their friend Mr.

Greaves, it had been decided to present Mr. Fleming with his portrait. If ever a man earned the good wishes of his colleagues George Fleming was that man. (Hear, hear.) It had been proposed to form a National Veterinary Medical Association, and there could be no doubt when they considered the great revolution now going on throughout the continent of Europe in veterinary politics—the inexhaustive researches of Pasteur with reference to inoculation for the prevention of Anthrax and allied diseases, Fowl Cholera, and Rabies in the dog—and Dr. Koch, of Berlin, in regard to tubercular disease—and as regarded the efficiency of inoculation for the prevention of Pleuro-pneumonia epizoötica—these and many other matters of the most vital import—required their most careful consideration. He trusted the time was not far distant when the Government of the country would awaken to the importance of these discoveries, and by sending a deputation of practical veterinary surgeons to the Continent to study them in detail, cause them to be introduced into this country. The important deputation to Lord Spencer, last April, promised successful results. He congratulated the Association on the election of Mr. Perrins as a member of the Council, and went on to say he was rather surprised to find at the annual meeting that the subject of the matriculation examination of students for admission to the various schools was not yet settled. It was very necessary that a decision should be arrived at, and that all the schools should subject their candidates to the same tests. That these tests should be of a more rigid character was, in his opinion, of the greatest import. They had now arrived at a momentous period of their existence, and the fact that an intending veterinary surgeon could read and write and was acquainted with the first few rules of arithmetic, was not sufficient. If they were to attain the position in society to which they were entitled as one of the learned professions, they must prove themselves men of liberal education. He advocated a more rigid examination for the diploma of the college, particularly as regarded practical experience. That it was not possible at present to compel every student to go for at least a year to a veterinary surgeon to learn practice before obtaining the diploma, was to be deplored. But something must be done. The students of to-day differed in many ways from the students of bygone days. Formerly a man served several years or practised before going in for his diploma; now many of the students went direct to college from school, and others adopted the profession not for love of animals or because it presented an opening in life, and to grant a diploma to men who had no practical knowledge of their art was a cruelty. The time would come when practical knowledge would be insisted upon, and in his opinion the best time to obtain it would be after the student had passed his first examination, by which time he would have obtained an insight into the duties he would be likely to be called upon to perform. The President next referred to the subject of dispensing with the aid of medical men on the veterinary examining board, and said he fully believed there were men in the profession quite capable of examining on the required subjects. But they must not do things by halves. If they were to do without medical help on the examining board, they must also do without extra help on the teaching staff of their schools. This would necessitate a great change in the course of work at the schools to fit men not only to take the post of examiners, but also to fill the positions of professors at the schools in all the subjects.

Mr. GREAVES, after thanking the President for his excellent address, expressed his regret that the council had been unsuccessful in their application to Government for a grant, and said it had been determined to apply for another charter, and one special point which would be provided for would be the power to insist upon apprenticeship, which he thought would meet the approval of all present. (Hear, hear.)

Mr. BLAKEWAY said he felt very acutely upon a subject touched upon in the President's address, because he thought all such societies should have the power to discuss political matters, to enable their representatives to explain their views upon them to the council. It had been said that these societies were not formed for the discussion of political questions, but he quite disagreed with those who held that opinion, and who were now beginning to alter their opinion.

Mr. OLVER congratulated the President upon his able address, and remarked that there was a very strong feeling that the examiners should be confined to members of their own profession. (Hear, hear.) He was quite sure there were men well able to examine in their own ranks, and it would strengthen the hands of the council if they expressed their opinion in that sense.

Mr. TRIGGER also complimented the President on his address. He also was of opinion that the time had arrived for the veterinary profession to conduct its own examinations. They had men fully competent to do the work of examiners. He suggested that the various associations should pass resolutions expressing their views and wishes, and forward them to the Royal College of Surgeons.

Mr. GREAVES said the question of dispensing with outside help on the board of examiners had been brought before several of the associations, and resolutions were passed unanimously in favour of confining the examiners to their own profession. He had for many years had a strong opinion on the point, and the more he thought about it the more he was convinced that it was not necessary to go outside for help, when they had men like Pritchard, Cunningham, and Lambert in their ranks. He should make an earnest effort to carry this point. (Hear, hear.)

Mr. OLVER moved that the time had arrived when the examining board should be composed of veterinary surgeons; this was seconded by Mr. TRIGGER, and carried unanimously. It was also decided to send this resolution to the council.

Some discussion took place in reference to the President's circular, and Captain RUSSELL, advertising his method of castration, complained that his motives had been misrepresented and misunderstood. He had no desire to trench on the practice of any professional brother, for he was willing to instruct any of his brethren in the use of the instrument, but he was bound under a heavy penalty not to reveal the secret of the operation within five years.

In the discussion the general feeling of the meeting appeared to be in favour of exonerating the President from blame.

It was decided to hold the next meeting at Worcester.

Several morbid specimens were exhibited, and gave rise to an interesting discussion.

Votes of thanks to the President for his address, and the late President and Secretary, were passed, and the company adjourned for dinner.

ROBERT C. TRIGGER, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

(*Concluded from p.* 49).

Very striking were the results obtained by the prompt measures adopted in the suppression of Cattle Plague in 1866 and 1872, equally striking would be the results in the case of other zymoses if measures equally prompt were adopted on their first appearance. It may be said that I have had climate and other local circumstances in my favour, when I tell you that in no single outbreak of Glanders that has come under my notice in Edinburgh (where

I have had full control over the animals) have I failed in arresting the disease, with the loss in small studs of one or two, and in larger from one or two to three or four animals. The same thing may be said of Rabies, which was utterly stamped out of Edinburgh, by purely precautionary measures, in the course of a few months, although it had assumed very alarming proportions, and it would have been stamped out even earlier than it was had not the local authority been thrown off guard by a positive professional opinion being publicly expressed that the disease was Diphtheria. The destruction of local centres of affection, the placing of the soil in a state of unpreparedness, are doctrines I would advocate mainly in reference to the prophylactics of specific diseases. Their value is proved in our dealings with Pleuro-pneumonia, with Glanders, with Rabies, with Cattle Plague, aye! even with Anthrax; and it could be rendered equally conspicuous in our dealing with Tuberculosis if the Legislature could once be prevailed upon to grapple with it—every animal suffering from the malady, I again repeat, should be at once slaughtered, and, if necessary, the owner compensated for his loss, and every particle of contaminated flesh, offal, etc., destroyed; and more especially should tuberculous milch cows be sought for in our dairies and immediately removed, and no bull with the slightest taint of Scrofula about him—either historically or actually—should be allowed to remain entire or even to live. Sooner or later not only Tuberculosis, but Anthrax and all allied diseases will have to be dealt with by the State, and the sooner it is done the better for the whole human race.

Finally, gentlemen, allow me, as an outcome of the remarks I have addressed to you, to draw your attention to one or two unpalatable facts connected with our profession. These are (1) the great neglect of a high scientific training in our educational curriculum, and (2) in a great measure a result of the first fact the low estimation in which we are held in scientific circles, and the insult we frequently have to suffer at the hands of members of the sister profession.

Up to a comparatively recent date—and, I believe, the first systematic class of the kind was carried on at my desire in the institution with which I am connected—no attempt was made in the colleges to teach morbid pathology in a systematic and practical manner; and even now I do not think it is taught in all the schools. The result is that the number of practical *pathologists* in our profession is very limited indeed; and I am not aware that any veterinary surgeon in Great Britain has done anything in this direction of universal importance.

It may, of course, be said that it is the place of the teachers to see to this, and that it is also to the benefit of individual students to take the matter in their own hands; this is all very true, but the former have neither time nor means to devote to such studies, and those among the latter whose talents fit them for such a pursuit are usually in the same position. None of the schools are endowed or assisted in any way, directly or indirectly, consequently the teachers are obliged to do an immense amount of work from which, if they are to follow truly scientific studies, they should be relieved; and there is not one single bursary offered for the encouragement of such studies amongst students or recent graduates. If we look at the sister profession we find that most of the teaching schools are in such a position as to enable them to place at least one teacher so much at ease, as that he may carry on scientific work without let or hindrance, and without any thought for the morrow, and in the case of students there are numerous bursaries, some large, some small, open for competition, and having for their object the assistance and encouragement of good men in extended scientific studies; but when we look at home can we point to any extraneous aid or encouragement to either teacher or student in this direction? Not one

penny in the shape of grants to the former, or of bursaries to the latter, is forthcoming.

Gentlemen, depend upon it we shall never take our proper and our rightful stand alongside the other professions, until *some* at least of our graduates are trained to practical scientific work, and trained in such a manner as to enable them to hold up their heads with the best pathologists in the world. Some of our continental brethren have gained for themselves a name and a fame in this direction. What have we done? The best answer is to be silent.

Some there are amongst us who are anxious to secure an honourable abode for our college (all praise is due to them for their efforts), but I would ask if it were obtained, would it not be like the obtaining of a nutshell without its kernel? We must improve ourselves in another direction first, unless we are prepared for a repetition of such a gross insult as that recently offered to us by an Indian medical man, or unless we are content to see—as is now practically the case—our place taken on boards of scientific inquiry into the nature and origin of disease by members of the medical profession (and I would here observe that little as many of them esteem our scientific attainments they are not backward in competing for any emoluments our profession directly or indirectly offers), nor should we have them every now and then pretending to throw light on subjects about which we poor ignoramuses (according to their estimation) know nothing, but which are as familiar to us in all their bearings as is the nature of our every-day work and duties.

After a short discussion in which Messrs. W. J. Mulvey, D. Dudgeon, C. Stephenson, J. E. Peele, and W. Hunter took part,

Mr. D. DUDGEON proposed, and Mr. J. E. PEELE seconded, that the discussion be adjourned until the next meeting of the Association. This was agreed to, and the meeting terminated with a hearty vote of thanks to Professor Walley for his excellent paper, and a similar vote to the Chairman.

Subsequently the members and visitors sat down to the annual dinner, the President in the chair. On the removal of the cloth the usual loyal toasts were given and responded to. GEORGE ELPHICK, *Secretary.*

THE NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE usual half-yearly meeting of this Association was held at the Norfolk Hotel, Norwich, July 4th, 1882, Mr. J. D. Overed, Bedfield (President), in the chair.

Amongst the members present were Messrs. G. G. Whincop, Norwich; W. Shipley, Great Yarmouth; and J. Hammond, Bale (Vice-Presidents); A. H. Santy, Norwich; G. A. Banham, Cambridge; E. Barker, St. Faith's; W. J. Bower, East Rudham; H. Newson, Beccles; and R. T. Barcham, Edingthorpe.

Letters were received from several members regretting their unavoidable absence. Mr. Francis and other gentlemen were present as visitors.

The minutes of the last meeting having been read and confirmed, the PRESIDENT delivered an inaugural address, in which the principal matters affecting the interests of the profession were noticed, especial prominence being given to the Veterinary Medical Act of 1881, which he characterised as the most important measure of the age, and from which he anticipated the most satisfactory results, not only to veterinary surgeons, but to the public at large. To all who had assisted in passing the Act he offered his warmest thanks and gratitude, and especially to Mr. George Fleming, who, he was glad to find, had been re-elected President of the Royal College

of Veterinary Surgeons, a richly-merited compliment, and a graceful recognition of the valuable services rendered by him to the profession, of which he is so distinguished a member. The President (Mr. Overed) then congratulated Mr. Santy on his recent election to a seat in the Council, which he hoped would long be retained by that gentleman, to assist by every legitimate means the advancement of the interests of the profession, and to express the views of his professional brethren in this part of the kingdom. He concluded his remarks by requesting the continued assistance and support of the members during his term of office in the presidential chair, which he hoped would be marked by a large degree of prosperity to the Norfolk and Eastern Counties Veterinary Medical Association.

The subject of the "British National Veterinary Association" was then introduced and explained by Mr. BANHAM, when the following resolution was unanimously passed :—"That this meeting approves of the formation of a British National Veterinary Association, and that the President and Mr. J. Hammond be the representatives of the Norfolk and Eastern Counties Veterinary Medical Association on the general committee for the furtherance of that object."

An elaborate and instructive paper was next read by Mr. BANHAM on "Stringhalt," which gave rise to an interesting discussion, in which most of those present took part, a hearty vote of thanks being accorded to that gentleman, with the request that the paper be sent for insertion in the professional journals.

Interesting pathological specimens were introduced and explained by the President, by Mr. Santy, and Mr. Shipley.

There were also some modern veterinary instruments and appliances laid on the table for inspection, adding to the interest of the meeting, which concluded with the usual vote of thanks, and by the members taking tea.

J. D. OVERED, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held on June 28th, at the Blackfriars Hotel, Manchester, Mr. Alexander Lawson, President, in the chair.

Present—Messrs. Jno. Lawson, T. Greaves, P. Taylor, W. Woods, W. Dacre, T. Hopkin, S. Locke, E. Faulkner, T. Briggs, J. Bunnell, H. Fergusson, W. H. Bridge, — Darwell, E. L. Leach, J. W. Ingram, A. M. Michaelis, and J. B. Wolstenholme, members ; with Messrs. Nour, Kirkman, Wormald, and Duckworth, visitors.

The minutes of the last meeting were read and confirmed, and the Secretary laid upon the table the letters of excuse for non-attendance.

Mr. W. H. Bridge, of Bolton, was unanimously elected a member of the Association.

The SECRETARY read Mr. Banham's letter of June 2nd, in reference to the proposed National Veterinary Medical Association, and drew attention to the pamphlet thereon which he had forwarded to members.

After some discussion, Mr. WOODS proposed, and Mr. WOLSTENHOLME seconded, that Mr. T. Briggs, of Bury, be appointed to represent this Society in the formation committee, together with Mr. Greaves, who had been previously selected by the sub-committee appointed to consider the same.

The report of the Soirée Sub-Committee was then read, containing a draft scheme for the coming-of-age celebration ; and on the motion of Mr. WOODS, seconded by Mr. P. TAYLOR, the report was adopted, and the present committee authorized to arrange and complete the same.

The SECRETARY read a letter received from Mr. J. B. Martin, of Roches-

ter, referring to a testimonial that it was proposed to give to the President R.C.V.S. (George Fleming, Esq.), for his arduous services during the promotion and passing through Parliament of the Veterinary Surgeons Bill.

Mr. THOMAS GREAVES moved, and Mr. W. WOODS seconded, that "this Association warmly entertains the proposal that the profession do in some suitable manner recognise Mr. Fleming's services in the obtaining of the Veterinary Surgeons Bill, 1881." Carried unanimously.

Mr. WM. DACRE then read a most interesting paper on "Navicular-thritis;" it was eminently practical, and was illustrated with many specimens. A good discussion followed, and, in conclusion, the PRESIDENT proposed that best thanks be given to Mr. Dacre. This was seconded by Mr. GREAVES, and carried unanimously.

At about the time of the last meeting a Mrs. Keal, widow of a veterinary surgeon who had been in practice near Liverpool, made application to several of the members for pecuniary aid; a little was individually subscribed, and it was thought desirable that inquiry should be made as to the advisability of granting some assistance from the Association. To this end Mr. T. Hopkin was appointed, and he now reported that he had written Mrs. Keal for references, and that he had also communicated with the lady and gentleman named by Mrs. Keal; the replies they made he now placed before the members.

The meeting at once decided that it was not advisable to make any grant in the case.

Mr. WOLSTENHOLME exhibited a cysticercus cellulosæ which he had found in the cerebrum of a dog that had died in convulsions.

JNO. B. WOLSTENHOLME, *Hon. Sec.*

SCOTTISH CENTRAL VETERINARY ASSOCIATION.

THE adjourned quarterly meeting of this association was held at Crown Hotel, Dundee, June 27th, A. Spreull, Esq., in the chair, the following members, etc., being present:—Messrs. Constable, Inchture; Ritchie, Forfar; Johnstone, Perth; Hampton, Arbroath; Bissett, Brechin; Sandeman, junr., Kirriemuir; Fingzies, Lochgelly; Hunter, Dundee; Philp, St. Andrew's; Black, Lochee; Panton, Blairgowrie; and Clark, Coupar Angus, Secretary.

The following gentlemen sent letters of apology for absence:—Messrs. Knight, jun., Dunfermline; Lowe, Perth; and Reid, Auchtermuchty. The minutes of the previous meeting having been read by the secretary were confirmed. Mr. Panton, Blairgowrie, having been nominated for membership,

The CHAIRMAN then read a communication from Mr. RUTHERFORD, secretary, "Scottish Metropolitan Veterinary Medical Association," anent proposed co-operation with Edinburgh and Glasgow Associations for an annual meeting. After discussion by members, it was proposed by Mr. JOHNSTON and seconded by Mr. CONSTABLE, "That this society cordially agree to proposed arrangement. Carried unanimously.

The CHAIRMAN then called on Mr. CONSTABLE, Inchture, who read a carefully-prepared paper on "Strangles," dwelling more particularly on the contagious nature of the disease, and stated that his reason for choosing this subject was from having seen a case of Strangles affecting the human subject caused by inoculation, and having been favoured with the following notes on the case by his friend, Dr. Robertson Errol, through whose kindness he had the privilege of seeing the patient who was attacked:—

On 31st of May last year, I was sent for to see J. W. A., a farm overseer,

who complained of severe sore-throat and great difficulty in swallowing food, and even saliva. On examining my patient, I found the cervical and submaxillary glands greatly swollen, tonsils also very much enlarged and inflamed. Pulse from 110 to 120; skin very hot and dry, and the temperature must have been considerably high. I am sorry I am unable to state the exact temperature, as, unfortunately, I had broken my thermometer only a day or two before, and had not got another. This patient was a stout healthy man, about thirty years of age, who enjoyed general good health, and had no hereditary predisposition to scrofula or phthisis. I was, on that account, all the more surprised to find there was so much glandular swelling in so short a time, from what at first I supposed to be a simple cold. As his occupation sometimes led him to have a pretty smart spurt of work, and then after that to stand for some time in the open field while warm, I at once concluded the attack had been brought on by a chill. My treatment at first was simple enough: emollient poultices to the throat and neck, with five grains of calomel and fifteen of scammony to give him a good smart purge. On making my second visit, I learned that the bowels had been freely moved, and altogether he expressed himself much better. The skin was cooler, and the pulse reduced to about 80. The swelling of the tonsils also greatly reduced, but there was still a considerable *stiffness* about the head and nostrils, like what one feels when affected with cold in the head. I ordered the poultices to be continued, and for food new milk, *ad lib.*, which I was sure would nourish and yet not hurt the tender tonsils. On the third day I found my patient, with one exception, much improved. Glandular swelling considerably less; pulse also down, and general temperature lower. There was a considerable redness and swelling all over the nose, with great redness of the lining membrane, and an offensive catarrhal discharge not common to an ordinary running from the nostrils, attended with some pain.

Remembering how often great relief is obtained when the nose is stuffed with cold, by smearing it with warm olive oil, I ordered this to be done, and to apply a warm poultice over all.

On the fourth day I found my patient much improved, the nose excepted, which was still increasing in size, and there was a nasty offensive discharge from the nostrils quite different from anything I had seen from nasal catarrh in the human subject.

Knowing a little about Strangles in the horse, I made inquiry if he had been working about any diseased animal on the farm, and learned at once he was attending to a young horse his master had recently bought, which was very ill with Strangles, and that he had been applying the poultices to the animal and kept him clean. I also learned from his wife that he had a great habit of picking his nose, which at once gave me a clue to a correct diagnosis of the whole affair. I at once saw that this was a case of accidental inoculation from the horse, and when I told them so, strange to say, both the man and his wife had formed the same opinion. After this the man got a little alarmed at the case, but I allayed his fears by telling him that it would just run its course and then subside. So soon as I learned the true nature of the case, I gave him a mixture of the Iodide and Bromide of Potass., the Bromide to soothe the nervous irritation, and the Iodide to act on the glands and as a blood purifier. I am happy to say the medicine had a most beneficial effect, by soothing the nervous irritation and allaying swellings in the neck. The nose, however, still increased in size and redness, till it seemed as if it would burst. It continued so till the eighth or ninth day, and then began to subside and blacken, much as a child's arm after successful vaccination. In about a fortnight from the commencement of the case, the man was quite well save a little puffy redness on the nose, and which was gradually wearing away.

Such cases are surely not very common, for during twenty-one years' practice in such an agricultural district as the Carse of Gowrie, it is the only one I have met with. My patient's master, on learning the true nature of the case, was at first somewhat incredulous on the subject, till the whole matter—how the man had no doubt got it by scratching his nose, as was his custom, when his fingers had been dirty with the discharge from the nostrils of the diseased animal, and had thus been inoculated in the same way as the arm of a child by vaccination.

Although rare, such a case shows the great necessity of being careful in handling diseased animals on the part of those who have the management and care of them; for how easy it is with a scratch on the fingers to be impregnated with a nasty and loathsome disease. We have seen and had to treat hundreds of cases of Ringworm got from those in charge of cattle, but we never had a case of Strangles before; and yet it might have been worse, as Farcy is a much more dangerous disease when communicated to man, it being almost always fatal in the human subject.

The reading of this paper gave rise to an interesting and instructive discussion among the members. The Secretary proposed a hearty vote of thanks to Mr. Constable, which was seconded by the Chairman.

Mr. Johnstone, Perth, consented to read a paper at next meeting, which is to be held in Perth. J. CLARK, *Sec.*

GLASGOW VETERINARY COLLEGE.

THE summer session of this institution terminated on the 5th July, and on the 8th, 12th, and 15th, the oral examinations of the Royal College of Veterinary Surgeons were conducted within the museum of the College. The Board of Examiners included Professor Crum Brown, Professor Turner, Dr. Andrew Wilson, and Dr. Dunsmore, University, Edinburgh; Mr. George Fleming, F.R.C.V.S., London; Mr. Alexander Robinson, F.R.C.V.S., Greenock; Mr. B. Cartledge, F.R.C.V.S., Sheffield; Mr. J. Roalfe Cox, F.R.C.V.S., London; and Mr. Archd. Robinson, M.R.C.V.S., Greenock. The following gentlemen were also present as *ex officio* members:—Principal M'Call, F.R.C.V.S.; Professors Knox, A.M., M.B.; Cooke, F.C.S.; and Macqueen, M.R.C.V.S., Glasgow Veterinary College.

Twenty-seven students presented themselves for the first examination, and of this number twenty-three passed very creditably, viz.:—

Messrs. M'Conechy, Islay; M'Millan, Glasgow; Stewart, Paisley; Forbes, Glasgow; Green, Irvine; Gilmore, County Antrim; Edgar, Wigtown; Bennett, Oxford; Calderwood, Paisley; Macdonald, Argyll; Mackeand, Wigtown; Murdock, County Louth; Baird, Dumbarton; Dove, County Down; Malloch, Perth; Beevor, Nottingham; Huston, County Armagh; Smith, County Armagh; Leckie, Dumfries; Hart, County Down; Butcher, Salop; Jolly, Wigtown; and Kerr, Crosshill.

Seven students also presented themselves for the second examination, all of whom were successful in passing, viz.:—

Messrs. Larkin, County Louth; Ross, County Antrim; Weir, Argyll; M'Nair, Helensburgh; Scouler, Middle Kerse, Stirling; Frew, Glasgow; and M'Gregor, Stirling.

The following gentlemen obtained the membership diploma of the Royal College of Veterinary Surgeons:—

Mr. Joseph M. Magill, Hilltown, County Down; Mr. Robert J. Maguire, Pollokshields, Renfrewshire; Mr. William Wright, St. Quivox, Ayrshire.

Medals granted by the Highland and Agricultural Society of Scotland, Principal M'Call, and certificates of merit granted by the college, were awarded in the different branches of study as follows:—

Botany.—Silver medal (Highland and Agricultural Society of Scotland)—Mr. Andrew Stewart. First-class certificates—Messrs. Malloch, Bennett, Butcher, and Mackeand. Second-class certificates—Messrs. Huston and Dove.

Chemistry.—Silver medal (Highland and Agricultural Society of Scotland)—Mr. Alexander L. M'Millan. First-class certificates—Messrs. Stewart, Butcher, and Malloch. Second-class certificates—Messrs. Huston and Macdonald.

Materia Medica.—Silver medal (Highland and Agricultural Society of Scotland)—Mr. Andrew Stewart. First-class certificates—Messrs. Butcher, M'Millan, and M'Conechy. Second-class certificates—Messrs. Forbes, Leckie, Smith, and Edgar.

Prescription Writing (special prize).—Mr. Samuel M. M'Conechy.

Best Oral Examination on Botany, Chemistry, and Materia Medica.—Gold medal (Principal M'Call)—Mr. A. L. M'Millan.

At the close of the examinations, the President of the Royal College of Veterinary Surgeons (Mr. George Fleming) intimated that of the twenty-three students who passed the first examination, and the seven who passed the second, twelve had succeeded in gaining the honorary distinction of "great credit," viz. :—

Messrs. M'Millan, Stewart, Gilmore, Edgar, Bennett, Dove, Malloch, Huston, Butcher, Ross, M'Nair, Weir.

THE FITZWYGRAM PRIZES.

THE Examination for these Prizes took place in London, the written part commenced on the 10th May, and the Practical on the 19th June, and was open to graduates of the R.C.V.S. who obtained their diplomas since the last competition, and who passed with "great credit," or "very great credit."

Mr. W. B. Walters, of Aldershot, and Mr. R. Rutherford of Edinburgh, were appointed the examiners. Only two candidates, Messrs. Sumner and Barrett, competed, both being from the Royal Veterinary College. The result was that Mr. H. Sumner gained the first prize, £50, and Mr. W. F. Barrett the second prize, £30.

Notes and News.

PROTRACTED INCUBATION OF HYDROPHOBIA.—The great frequency of Rabies in the South of England is attracting much attention, and the occurrence of cases of Hydrophobia is causing much alarm. One of these cases is remarkable for the long period of latency that ensued after the person was wounded by the rabid dog. Thirteen months ago, William Mills was bitten by a dog in Walmer Road, Plumstead. The wound was cauterised and soon healed. A few days afterwards the dog was destroyed, and the circumstance passed out of mind, the man continuing at his work in the shell foundry of the Royal Arsenal at Woolwich, apparently in good health. On May 12th he complained of pains, and on the 14th he showed symptoms of Hydrophobia, all the worst features of which painful disorder were rapidly developed, and the man died in dreadful convulsions. He was a married man, about forty-eight years of age, and had been twenty-seven years employed in Woolwich Arsenal.

EHRLICH'S METHOD OF STAINING TUBERCLE-BACILLI.—This method is a great improvement over Koch's original method, in that the bacilli are

much more brilliantly stained and easily found; and it also takes a much shorter time, the whole process requiring only from half an hour to an hour. Ehrlich has employed it chiefly in the examination of sputa; and it has now been adopted by Dr. Koch, in preference to his own method. The sputum is spread in a thin layer on a cover glass, and dried. In order to fix the albumen, the cover glasses are kept at a temperature of 100° to 110° Cent. (212° to 230° Fahr.) for an hour; or, in practice, it is sufficient to pass them three or four times through a gas flame. The staining solution is prepared as follows. About five cubic centimètres of pure aniline are added to 100 cubic centimetres of distilled water, well shaken, and then filtered through a moistened filter. To this mixture, a saturated alcoholic solution of fuchsine, methyl-violet, or gentian-voilet, is added till precipitation commences. The cover-glass is allowed to float on this, with the side on which the sputum has been spread directed downwards, for a quarter to half an hour. It is then washed for a few seconds in a strong solution of nitric acid (one part of commercial nitric acid to two parts of distilled water), and afterwards in distilled water. In this way, the stain is extracted from everything but the tubercle-bacilli. The ground substance may be stained brown (if the bacilli have been stained violet), or blue (if the bacilli have been stained red), by way of contrast to the bacilli. It is interesting to hear that, in Berlin, the examination of sputum for these bacilli is now generally employed, as a means of diagnosing tuberculous affections of the lung from others: for the bacilli are constantly present in the sputa in cases of tubercle.

INOCULATION OF LEPROSY.—A recent number of Virchow's *Archiv* (vol. lxxxviii., 1882) contains an account, by Professor Köbner of Berlin, of attempts to inoculate Leprosy on animals. Although the results were negative, the experiments are of considerable interest. Professor Köbner confirms fully the observations of Hansen, Neisser, and others, in reference to the bacillus of Leprosy. He not only found the organism in fresh juice from the tubercles, but found it in preparations which had been many years in alcohol, and still more easily in dried portions of Leprosy-tissue which had been kept folded in paper for an equally long time; so much so, that he recommends travellers in countries in which Leprosy is common to preserve the tissues in a dried state, in so far as they wish to keep them for subsequent examination in reference to the bacillus. A tubercle was excised from the thigh of a patient, a German, of healthy family, who had contracted the disease during an eleven years' residence in Pernambuco. Inoculations with the juice, and with small portions of the excised tissue were made on a monkey, two guinea-pigs, two young rats, a white mouse, two rabbits, a pigeon, three eels, a mud fish, and a frog. The monkey died 126 days afterwards of Tuberculosis, but no Leprosy-tissue was found, any more than in any other of the inoculated animals. One of the rabbits died on the fifty-sixth day, the other was killed after five months and a half. The inoculations in the case of those animals had been made by inserting small pieces of Leprosy-tissue into the anterior chamber of the eye. Those portions of tissue remained visible, and gave rise to no inflammatory symptoms. After being fifty-six days immersed in aqueous humour the Leprosy bacilli were well preserved and easily demonstrated, but they had not grown into the tissues of the iris or cornea. In preparations of dried blood, prepared by Ehrlich's method, Professor Kobner demonstrated that the bacilli are present in the circulating fluid. So far from considering the results of his negative experiments as conclusive, Professor Kobner refers to the time that elapsed before Tuberculosis, Recurrent Fever, and Septicæmia were successfully inoculated on animals. Further experiments of the kind are certainly desirable, and the attention of medical men practising in countries in which Leprosy is common may be advantageously directed to this question.

SPRATTS DOG BISCUIT.—We understand that "Spratts Patent," in addition to feeding the dogs at the Kennel Club Alexandra Palace Show in June, was also entrusted with the benching of the exhibits. This firm will also supply the benches, pens, and food for the forthcoming Royal Cornwall Dog and Poultry Show.

NARROW ESCAPE.—Prof. James Law, F.R.C.V.S., of Cornell University, Ithaca, N.Y., had a narrow escape from death recently. By mistake he took a six-grain dose of morphine in place of quinine, and administered the same deadly dose to his daughter, who was also ailing. As soon as the symptoms began to appear the facts flashed upon his mind, and by the aid of the telephone prompt assistance was summoned, and the two lives were saved. We congratulate the stock-breeding interests of America upon Prof. Law's escape from this peril. His death just now would have been a national calamity, as we have no man amongst us qualified by nature, education, and habits of mind to take up the work which he now has in hand, and in which he has already done such signal service. May his days of usefulness be yet long in the land.

Correspondence, etc.

ARMY VETERINARY DEPARTMENT.

DEAR MR. EDITOR,—Now that we Army Veterinary Surgeons are departmental and have got a roster, I hope we shall see the reliefs carried out with as much regularity as in the Army Medical Department, notwithstanding the hitches which, I am informed, exist. If it is considered to be for the good of the service to form us into a department, and lay down a regular and specified tour of foreign service, surely nothing ought to be allowed to mar the working of the whole machine.

It is true, I believe, that there are officers in the Department at home who prefer home to foreign service, and I consider they would act foolishly did they come out here one day sooner than they can help. But then we out here would like a change *occasionally*, and who could blame us? But then all parties can't be pleased, and so we remain.

Did this Indian Government treat us decently, probably some would be easily induced to prolong their tour of service in the country; but unfortunately we get what is called "consolidated pay," which bars all allowances, and out of it one has frequently (under the present district system—only yet in its infancy) to spend a trifle in travelling on duty at the public expense, so called.

I have got charge of one of these districts, and the outlay incurred in travelling brings my present pay—rupees 401 per mensem (after five years' service)—down to less than I drew when I came to the country under five years' service.

This is not encouraging, and, moreover, we seem to be at the beck and call of every commissariat officer in the district. When called upon to travel on duty at home, one is treated like an officer and gentleman, but out here I have known a pay examiner to cut a gharry (cab) fare to the amount of about sixpence, because it was that much more than what had been charged over the same distance on a previous journey, although a certificate on honour was signed to the effect that these expenses had been actually incurred.

Another word about the district system, and that is, that I view it with the utmost abhorrence, for an officer in a large district will have no fixed home; he will have to visit every part of his charge at least once every

two months, I presume; will have to instruct the men in the forge, as well as write a long report, and in urgent cases—there's the rub!—will have to proceed forthwith, no matter what he may like or dislike to the contrary.

In less than ten effective months I had six or seven of these urgent calls to one battery. Fancy being in a place like Lucknow, with about five such outlying stations. No! this is not the country for the district system, for I have not the slightest doubt but that nature, which is so adverse to Europeans out here, would run them in for by far the largest portion of their work just in the hottest weather; and where life is reduced to a bare existence in an enormous house, one can guess what it would be in a small railway carriage.

Perhaps I am a false prophet, but I venture to say that four out of every six men of an Indian Department working such a system, would either become a prey to climate, or leave the service disgusted, and perhaps with shattered health.

As for privilege-leave, there would be no such thing under such a *regime*, for with the numbers we have at present, it is a mighty scarce commodity.

One very glaring evil in travelling about so much, as the system must entail, will be not only the great inconvenience resulting therefrom, but the rent of the various rest-houses, better understood as "Travellers' Bungalows" or "Dâk Bungalows," and which cost a rupee per diem, exclusive of the extra cost of living and for servants, and does not ensure fixity of tenure; for one can be turned out after twenty-four hours' occupation, if one's rooms are required by any one else. In fact, I have studied this rolling-stone system, as it appears to me it must work, and have failed to discover a single redeeming feature in it. A slight increase of pay will be offered in case an Indian Department is formed to work it, but it will be all swamped, as shown above, unless a *very* liberal travelling and lodging allowance is given.

I notice in a short note from a cavalry officer of great experience in the last *Army and Navy Gazette*, that Army Veterinary Department men are being promoted for services in the field, and most sincerely hope he is not chaffing, for, barring Messrs. Clayton and Woods, I have heard of nobody else who was *actually* on service having got anything, although this would be a very good channel through which to do a little for a department the members of which received no honours, though their duties were *most arduous*.

I am anxiously waiting to hear the outcome of the Secretary of State's "looking into our case during last Parliamentary recess." Apologizing for thus far trespassing on your valuable space,—I remain, yours sincerely,

"HOPEFUL."

CLAUSE FIFTEEN OF THE VETERINARY SURGEONS BILL.

SIR,—Some veterinary surgeons besides myself, possibly, have been disappointed lately at not finding some information in the veterinary journals respecting the practical working of the above clause in that Bill which has been secured for us by one of our very best friends.

Probably my apprehensions are groundless, and those in command of our interests may compare me to a passenger on board ship needlessly inquiring of the officers whether there are any rocks about. However, to be as short as possible, I will remark that I am daily becoming more convinced that the work of discriminating between the worthy and unworthy among the applicants for registration is one of extreme delicacy and difficulty, and I will give one case out of many I could relate to illustrate my meaning.

Many years ago a veterinary surgeon (Mr. H. Rickard) was practising in this town, and also kept a forge, at which at various times there worked

men called Ed. Seccomb, Rd. Bennett, Wm. Roberts, and John Rodda, and it is as true as it is amusing that as these men left their situations they every one practised as a V.S.

The first-named (always known as "Navvy Jack") was employed (when out of jail) by many of the surrounding farmers. Well, Navvy Jack is dead.

The second carried on a general smith's business, and over his door is a large board, with the words, "Smith and Cattle Doctor." This aspirant is also dead; but the business is continued by his son, a young man, and the degrading signboard still occupies its prominent position, as if its object were to maintain the homology of farriery and veterinary surgery.

The third has for many years been employed as general manager and veterinary surgeon by a firm of millers and merchants here, and still continues in that capacity; but he is sufficiently intelligent to know his weakness, and frequently seeks my assistance.

Now, as regards the last of the quartette, he has also carried on business as a general smith for many years, but does not confine himself entirely to his legitimate work, for, possessing the proverbial quack doctor's tongue, many men have been found willing to pay double for having their horses blemished for life.

Such characters as these need not occasion any alarm while occupying their present position, but if such men can, by strategy, secure registration, the question for our consideration will then be, Does our Act of Parliament raise us by lowering quacks, or does it lower us by raising quacks? And now, as an apology for these remarks, I must state that this last-named blacksmith is seeking registration, and goes about with a piece of paper, boasting that it is a letter from London about his joining the College. Reference was made in a recent veterinary journal to a cabman (who has been with a veterinary surgeon) making his application. If a veterinary surgeon's smith considers he has a chance of registration, why not his groom? for both could find plenty of sentimental sympathisers to provide them with testimonials. I will only further remark that I feel that the next few months must either tend to remove us from or connect us with a most unenviable class of men, and repeat that I apprehend our worthy Council have before them a task as unthankful as it is difficult.

Yours, etc.,

Penzance, Cornwall. J. STEPHENS, M.R.C.V.S.

[The Registration Committee has commenced its onerous task, and the names of the unqualified practitioners selected for registration under the Act will, in all probability, be placed before the members of the profession before final approval, in order that the list may be carefully scrutinised. The penal operation of the Act does not commence until 1884; so there is plenty of time for deliberation.]

NEW REMEDIES.

DEAR SIR,—We beg to thank "Pharmacon" for his fairness in stating that the Tonic Mixture he examined and reported on in the May number of the VETERINARY JOURNAL was not the Mist. Quinquiniæ Comp., designated by Mr. Maynard the "Tonic of the Future;" and as "Pharmacon" makes no comment as to its qualitative composition, we conclude that he found our preparation *what it professes to be.*

As regards the label, we think it should be explained that *two* have been issued, one a very long time since, and the other early this year. The old label appears to have been upon the bottle referred to by "Pharmacon," whilst the new one is alluded to by Mr. Maynard. We must therefore ask

"Pharmacon" and your readers to acquit Mr. Maynard of any intention of misquoting facts.

As to quinquinine being therapeutically of greater value than quinine, the assertion is borne out by the medical profession (as stated in our advertisements in the VETERINARY JOURNAL), amongst whom we may mention Dr. Lauder Brunton in England, and M. Froloff in Russia; and further state that in the malarious districts round Faversham, Strood, and Rochester, and in Romney Marsh, the quinquinine is used in very much larger proportion than quinine.

If we might be allowed to comment upon "Pharmacon's" remarks as to our being conversant with Mr. Maynard's article before its publication, we would say that the writing of it was quite a spontaneous act on the part of Mr. Maynard; but our representative, Mr. Huish, being at Romsey a few days before he was at Liverpool, on March 13th, it was quite natural that he should hear of its being about to be sent to the Journal for publication.—Yours obediently,

MACKEY, MACKEY AND CO.

DEAR SIR,—I should not have troubled you with another letter on the above subject, had not "Pharmakon" in the current number of the Journal made statements absolutely untrue and wilfully false.

Referring to my article on "The Tonic of the Future," he makes me say that I had *cured* a case of Pyæmia in six hours by administering the quinquinine mixture.

What I really said was that "the patient was *seen* six hours after the medicine had been given, was chewing the cud, appeared comfortable, and made a *rapid* recovery."

A man who, to point his own argument and suit his own ends, deliberately misquotes to the degree of making the word "rapid" equivalent to "six hours" must wilfully make the substitution, and is not to be tolerated as a fair critic.

In his first letter "Pharmakon" was good enough to insinuate that my cases existed only in imagination; in my reply I gave him the name and address of the owner of the St. Bernard pup; and he now goes out of his way to say that my doing so adds "very little to the history or interest of the case." Perhaps it does not; but it goes to prove the case was not a fictitious one, much as "Pharmakon" may try to ignore the fact.

I could also furnish "chapter and verse" for the other cases, but as one has produced so little satisfaction to "Pharmakon," it would be useless to do so. "Pharmakon's" other mis-statement has reference to the quantitative composition of the Mist. Quinquin. Co. being absent from the label.

Here is the copy as it appears on the bottle now before me, and on a similar one when I wrote the article in question:—Formula—Quinquinine grs. xvj.; Tinct. nuc. Vomica, ʒij.; Liq. Ferri Dialys Conc., ʒj.

As to proving my statement that quinquinine is a better therapeutic agent than quinine, I can do so by assuring "Pharmakon" that before the advent of the compound preparation I used quinquinine alone, and found better results from it than from quinine, the former being more easily assimilated, and often proved itself tonic where quinine, or bark, had not.

In conclusion, I would say that the mixture has been used very often since I wrote the article, with the best possible results, and it will ever find a place in my pharmacy.

I did not draw attention to the mis-spelling of "Pharmakon's" *nom de plume* with the idea of cavilling at it, but on reading his letter a faint suspicion came over me that your correspondent was possessed of no small

amount of self-importance, and more than a *trace* of vanity concerning the cleverness of his writing.

With these impressions upon me, I thought it would be just as well to pull him up over the "καππα" in "φαρμακον," and with all due deference to his superior (?) learning, I beg to say I fail to be convinced of the propriety of spelling the word with a "*c*."

The *English* words so spelt may be counted upon the fingers and thumb of one hand by adding one, and in neither of the six occurs the word "pharmacon."

Yours very truly,

WM. MAYNARD, JUN., M.R.C.V.S.

THE EXAMINATIONS.

SIR,—I desire to protest against the system of allowing students who have been rejected to pass afterwards with "great credit." Surely there is something anomalous about such an arrangement, and I submit that it is very unfair to honest students, who have gone through "on the square" and achieved distinction, that others who have had much more time should be equally distinguished.

It must detract seriously from the lustre of a certificate of merit that idle and dissipated, though in many cases able, students, who, alas! are only too numerous, and who, to quote the late Professor Spooner, "contaminate the very air of the College," should be allowed to obtain the same document by simply "pulling themselves together" when they think they will, after leading astray many promising young men.

I am, sir, yours truly,

"RECTUS."

Communications, Books, Journals, etc., Received.

Communications have been received from G. A. Banham, Cambridge; R. C. Trigger, Newcastle; J. Ferris, A.V.D., Athlone; G. Evans, A.V.D., Madras; H. Peele, West Hartlepool; A. W. Hill, London; J. Stephens, Penzance; "Rectus"; J. B. Wolstenholme, Manchester; M. Treacy, Indianopolis, U.S.A.; "Hopeful"; R. Paterson, Downham Market; R. W. Burke, A.V.D., Limerick; W. Maynard, Romsey; Mackey, Mackey, and Co., London; J. Clark, Coupar Augus; A. Broad, London; J. D. Overed, Blofield; W. Shipley, Great Yarmouth; E. A. Drew, Oldham; J. McCall, Glasgow.

BOOKS AND PAMPHLETS: *M. H. Hayes*, Riding on the Flat and Across Country; *A. Gotti*, Inoculazione preventiva del Carbonchio e Vaccinazione Carbonchiosa di Pasteur; *J. M. Ostertag*, Anleitung zur Erkennung und Beurtheilung der Schafräude; *G. T. Leisering und H. M. Hartmann*, Der Fuss des Pferdes in Rücksicht auf Bau, Verrichtungen und Hufbeschlag. Bulletin de la Société Centrale de Médecine Vétérinaire; Transactions of the Epidemiological Society of London; Proceedings of the Medical Society of the County of Kings.

JOURNALS, ETC.: *Stockbreeders' Gazette; The Squire; Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinärkunde; Revue Vétérinaire; Annales de Méd. Vétérinaire; Deutsche Zeitschrift für Thiermedicine und Vergleichende Pathologie; Recueil de Méd. Vétérinaire; L'Echo Vétérinaire; Archives Vétérinaire; Journal de Méd. Vétérinaire et de Zootechnie; Lancet; Field; Irish Farmers' Gazette; Land and Water; Wochenschrift für Thierheilkunde; American Live Stock Journal; Medical Press and Circular; Live Stock Journal; Agricultural Gazette; Mark Lane Express; British Medical Journal; American Veterinary Review; La Clinica Veterinaria; Der Thierarzt; La Presse Vétérinaire.*

NEWSPAPERS: *Daily Chronicle; Irish Times; Toronto Globe; Le Nouvelliste de Seine-et-Marne; Montreal Gazette; Freeman's Journal; Sport; Glasgow Citizen; Glasgow Herald; Scotsman.*